# Module IV: Assessing Individual, Family, and Community Responses to Toxic Substances

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## Competency Statement

The learner will understand the significance of a holistic, interdisciplinary approach to nursing practice, particularly as it relates to environmental health issues. The learner will be able to discuss the impact of environmental hazards on the individual, family, and community. They will understand how to utilize the nursing process to assess the presence of environmental hazards and plan, implement, and evaluate interventions. Further, the learner will be able to recognize atypical patterns of illnesses in an individual or a community (sentinel health events); appraise exposure, occupational, and environmental status; conduct a community assessment; and make referrals as appropriate. Pope et al. (1995) state that competency in environmental health assessment and referral is needed by all nurses. This includes gaining a working knowledge of the psycho–social sequela and stress symptoms that may result from exposure or proximity to environmental hazards. The learner will embrace the idea of the nurse as one who assists individuals, families, and communities in a wellness pattern of living by providing education, communicating risk, and facilitating access to environmental expertise.

## Rationale

Over the past decade there has been an increase in local and global environmental concerns. Uncontrolled hazardous waste sites are prevalent throughout the United States. The Environmental Protection Agency (EPA) has identified more than 33,000 hazardous waste sites since 1980. For many years the Agency for Toxic Substances and Disease Registry (ATSDR) has reviewed the effects of hazardous waste sites and other environmental exposures on human health including how they impact disadvantaged groups and ethnic and racial populations. As of December 1998 there were 1,258 hazardous waste sites proposed or listed on the EPA National Priorities List (NPL).

Furthermore, ATSDR estimates that 3- 4 million children, less than 18 years of age, live within one-mile boundaries of at least one hazardous waste site. Children who live near hazardous waste sites can have greater exposures, greater potential for health problems, and less ability to avoid hazards than do adults. Recognizing that children are a vulnerable population to hazardous exposures, the ATSDR launched an initiative in 1996, called the Child Health Initiative. The goal of the Child Health Initiative is to emphasize child health in all agency programs and activities.

Another of the special initiatives that ATSDR has recently undertaken is assuring that public health is a key component of the national and state Brownfields agenda. Brownfields are industrial or commercial properties that were abandoned, idled, or under-used and are being redeveloped. There are an estimated 600,000 Brownfields sites in the nation. Nursing

activities at Brownfields sites can address critical health elements at the individual, family, and community level by considering potential public health problems resulting from the redevelopment.

In addition, individuals, families, and communities are increasingly seeking information and resources to assist them in understanding environmental hazards to prevent and limit psychosocial and physical health effects. When completing health assessments, the nurse must be prepared to consider that the symptoms observed or reported by clients may be the effect of exposure to toxic substances.

As the largest group of health care providers in the United States, nurses are uniquely positioned and widely sought to provide support and information regarding environmental health issues. Nurses must be prepared to meet the growing demand for education, advocacy support and resource needs for environmental health. Although historically and theoretically this role is within the purview of the registered nurse, environmental hazards and their effects on individuals, families, and communities is not a part of most nursing curricula (Neufer, 1994) or nursing practice.

## Objectives

Upon completion of this module, the learner will be able to:

1. Identify potential and actual impacts of environmental hazards on the psychosocial and physical health of individuals, families, and communities.
2. Recognize and propose basic nursing strategies for common environmental hazards.
3. Recognize when to refer a client presenting with a problem of environmental etiology to a specialist, practitioner or public health agency.

## Vocabulary

Adverse health effect
Brownfields
Environmental health hazards
Environmental Protection Agency (EPA)
National Priorities List (NPL)
Primary prevention
Risk communication
Secondary prevention
Sentinel health event
Tertiary prevention

## Course Content

In an effort to help nurses gain a sound foundation of knowledge related to integrating and applying environmental health issues into existing nursing practices, the information presented in this module is set within the framework of the nursing process. Key issues for nursing consideration are highlighted in text boxes.

## Assessment

**1.1 Give an example of each of the four types of environmental hazards**

There are various methods to classify environmental health hazards. Most commonly they are classified as physical, biological, chemical, or psychosocial.

Physical hazards are those associated with physical objects and environmental factors that envelop individuals, families and communities. They include noise, radiation, ionizing radiation, electromagnetic fields, as well as vibration, lifting and repetitive motion (Pope et al., 1995).

Biological hazards are caused by living organisms in the environment and include infectious agents, insects and animals, and plants. Infectious agents are usually transmitted by contact with an infected person, contamination of drinking water supplies (improper sewage treatment and solid waste disposal) and through the air (enhanced by improperly cleaned heating and cooling systems).

Insects and animals act as reservoirs and vectors and transmit communicable diseases. Many plants, especially houseplants, are poisonous and can cause accidental poisoning with small children if ingested. Plants can also be a biological hazard to those individuals who are allergic.

Hazards that are caused by specific chemicals and gases are classified as chemical hazards. They include pesticides, (herbicides, fungicides, and insecticides) and other household and industrial chemicals. Insecticides and herbicides used in large scale agriculture—as well as in the household, yards and gardens—bring about numerous health effects ranging from nausea to nervous disorders. Not only are many insecticides and herbicides acutely toxic, but some are highly suspect carcinogens.

Chemical hazards also include air pollutants (carbon monoxide, ozone, sulfur oxides, volatile organic compounds, and nitrogen oxides); solvents (benzene, nitrobenzene, xylene); and water pollution. Solvents, which are used in products such as paint thinners, lacquers, and varnishes cause a wide variety of health effects that range from dermatitis to anorexia.

Psychosocial hazards are those related to, or arising from the mind, emotions, or matters affecting human welfare. They include violence, stress and high-demand/low-control occupations and situations (Pope et al., 1995).

## Learning Activity

Using the case study presented in Appendix A, (1) identify the hazardous substance, (2) classify the type of hazard, and (3) discuss in small groups how exposure to the hazard affected the health of the child, family, and community.

### 1.2 Detect possible hazardous exposures through a health history assessment

Within the health history assessment, nurses hold a key position in both the detection of hazards that may contribute to a future diagnosis and the recognition of hazards contributing to a current diagnosis. Through a holistic and proactive approach, nurses can initiate preventive interventions before disease is manifested, and interventions to limit the health effects of current exposures.

Nurses must apply skills in critical thinking and consider multiple factors and questions related to nursing at the individual, family, and community level. Nurses are often in a front line position to not only help the individual and family, but possibly the entire community by detecting and correlating health effects and sources of contamination.

### 1.3 Identify sentinel health events

Sentinel health events are unusual patterns of illnesses occurring in persons or community groups. For example, local health care professionals discover several cases of a relatively rare disease in several individuals who work at the same plant; or, residents may begin to notice "too many" cases of childhood leukemia in a particular neighborhood near a waste dump. These unusual patterns of illnesses, whether in individuals or communities, are called sentinel health events. When investigated, sentinel health events may turn out to be unrelated to environmental exposures. However, they can also act as a "red flag" for wider environmental health problems, such as pesticide and lead poisoning (Pope et al., 1995).

### 1.4 Complete an environmental exposure history

In order to obtain a sensitive and accurate client assessment, it is essential that the health history integrate an exposure history. The exposure history includes 3 components—an exposure survey, work history, and an environmental history (see Appendix B). An exposure history should be taken on every client. Taking an exposure history requires only a few minutes of time and can be abbreviated, expanded or focused according to the patient's signs and symptoms (ATSDR, 1992). The goal for completing an exposure history is to recognize risks and responses related to exposures and to prevent or limit adverse health effects.

The exposure survey focuses on past and current exposure to metals, dust, fibers, fumes, chemicals, biologic hazards, radiation, or noise and vibration and includes the description of a typical work day and discussion of other family members, co-workers, etc., who may have similar symptoms. A review of health and safety practices at the work site is completed.

The second component, the work history, includes an occupational profile of all jobs including short-term, seasonal, part-time employment, and military service. The occupational exposure inventory, as a part of the work history, includes names of hazardous substances worked with and questions relative

to work related illnesses, problems or injuries (ATSDR, 1992).

The environmental history assesses present and prior home locations, jobs of household members, home insulating, heating and cooling systems, indoor air pollution, common household products, pesticides and lawn care products, lead paint and waste.

When carefully completed, the exposure history can capture a valuable, comprehensive, and sensitive client assessment. When conducting an exposure history, the nurse should stress that exposures can occur at the workplace or with hobbies. Hobby related exposures are an essential component of the assessment. A few examples of hobbies that involve exposures to hazardous substances include:

- Working with stained glass;
- Making or glazing pottery;
- Fishing (making lead sinkers);
- Building, repairing or painting boats;
- Stripping/varnishing furniture;
- Making or repairing jewelry; and,
- Shooting at firing ranges (lead shot).

Also, clear and comprehensive documentation of the responses to the exposure history should be provided. This documentation is often the only data available for studying links between health and the environment. Finally, multiple variables such as development, culture, and society, are directly related to the health effects of exposures to hazardous substances. These need to be considered individually.

## Learning Activity

Read a Case Studies in Environmental Medicine: Taking an Exposure History. Using the forms found in Appendix B complete an exposure questionnaire with a classmate

After completing the exercise answer these questions: What risks for environmental or occupational exposures did you identify? What are the risks you identified? What are individual control measures that could be used to reduce the risk of exposure? What are nursing roles with these control measures? Be prepared to discuss in small groups.

### 1.5 Discuss the impact of hazardous substances on physical health for individuals by growth and development stages

The impact of hazardous substances on the health of individuals, families, and communities is complicated and interrelated. Responses are affected by many cultural, social, psychological, and economic conditions (Vyner, 1988). Responses to environmental hazards can be direct (severe burns from radioactive waste) or indirect (less productive farming due to global warming); general (ramifications of smog cover) or specific (lead poisoning in children); immediate (burns); or long range (increased cancer rates among farm workers) or trans–generational (exposures to females that cause birth defects in offspring) (Stevens & Hall, 1993).

The impact of hazardous substances is also determined by the dose and duration of exposure and health factors such as age. Developmental milestones mark phases of changing susceptibility that can profoundly affect the consequences of chemical exposures. The following section highlights aspects of developmental stages to form the basis of critical areas of nursing considerations in conducting an exposure history.

- **Pre-conception.** Several adverse reproductive effects, ranging from infertility to spontaneous abortion, as well as genetic damage that may lead to birth defects, can result from exposure of men and women to home, environment and workplace hazards. About 1 in 12 couples of reproductive age in the United States is infertile. However, it is unclear as to the percentage of infertility that is a direct result of exposure.

  Both oocytes in females and spermatozoa in males can be adversely affected by hazardous exposures; however, they are affected differently. Females can be effected by both their own exposures and those of their mothers since oocytes do not regenerate. Females may accumulate significant toxins throughout their lives which become mobilized during pregnancy and put the fetus at risk. For example, congenital lead poisoning has been diagnosed in infants born to women who had lead poisoning as children. In contrast, spermatozoa in males are in continual development after puberty, which limits harmful effects of paternal exposures to the period immediately before conception (Bearer, 1995).

- **Fetal.** During the fetal stage, the exposure of the fetus is the same as that of the mother. Both current and pre-conceptional maternal exposures may affect the fetus. For example, compounds with low molecular weight, such as carbon monoxide, can easily pass through the placenta (Bearer, 1995).

- **Newborn.** The newborn's main sources of exposure are provided by the mother and father through occupational exposures, breast milk, packaged formula, drinking water and anything that may come in contact with the baby's skin. Many environmental pollutants have been shown to pass through the mother's breast milk, including: polychlorinated biphenyls (PCBs) and lead (Bearer, 1995). Also, parental occupations or hobbies that involve working with or near toxic substances can pose a risk to newborns and other family members through take-home contamination. Take-home contamination is the transmission of toxic chemicals from the hobby or occupational setting to homes and residences (McClellan & Borak, 1998). This results in exposure to the toxic

substances by direct contact with contaminated skin or clothing, by contact from tracking toxic substances into the home on work shoes and clothes, or even by laundering contaminated clothing with other family members' clothing.

- **Infant and Toddler.** As infants and toddlers begin to crawl and explore their worlds, they are often found in the micro-environments of the floor or ground. Thus, floor surfaces are important sources of toxins, as is the chemical content of the layer of air near the floors. Wood stoves that aren't maintained and vented can emit toxic gases including carbon monoxide, oxides of nitrogen, particulates and hydrocarbons. Some toxic gases, including mercury vapor, are heavier than air and layer close to the floor. This, coupled with the toddler's higher respiratory rate, can result in significantly higher inhaled doses of toxicants as compared to an adult's dose in the same room. Accessible surfaces may be contaminated with lead dust or paint chips, pesticides, lawn chemicals, or floor cleaning products (McClellan & Borak, 1998).

  In addition, infants and toddlers are at a vulnerable stage of development for the following reasons:

€ Their rapidly growing bodies have a high metabolic rate, so they absorb and metabolize chemicals more readily and at a faster rate.

€ Their central nervous systems are not yet fully developed, so toxic exposures can have significant and permanent effects on this sensitive body system.

€ Even at lower concentrations, any toxic substances they do ingest will have a greater health impact due to smaller body weight and surface area.

**Nursing Considerations: Pre-conception through School-age**

- U Have the parents had any past diagnoses related to hazardous exposures?
- U What, if any, hazardous substances have the parents been exposed to?
- U Are any exposures to hazardous substances present in the home, community, or occupational environments?
- U Are there any hobbies that may involve exposures to hazardous substances?
- U If a parental occupation or hobby involves exposure to toxic substances, are the parents aware of "take-home contamination" risks?
- U Is there any current or planned renovation in the home?
- U Are their any cultural or behavioral issues that may be predisposing to certain exposures or illnesses? (See module II)
- U Does the child regularly visit or spend time in a structure built prior to 1978 that has peeling, chipping or chalking paint?
- U Do the parents use a wood stove?
- U Does the child spend time or play in or around any polluted or potentially polluted ponds, streams or other bodies of water?
- U Is the child involved in any arts and crafts activities?

€ The normal hand-to-mouth behavior that infants and toddlers exhibit increases risk of ingestion as a route of exposure.

€ **School-aged.** School-aged children begin venturing outside of the home and usually spend a great deal of time outdoors in parks and playgrounds and in daycare or school environments—each with their own hazards. Some outdoor air pollution includes ozone, particulates, oxides of nitrogen, and sulfur. Air and soil can become polluted from local sources such as hazardous waste sites, leaking underground storage tanks, or local industry. Schools and daycare environments extend a child's opportunity for exposure to indoor and outdoor air pollutants and contaminated drinking water and soil. Arts and craft activities also present potential risks of exposure to toxic materials such as glues, paints, and dusts (McClellan & Borak, 1998).

- **Adolescent.** The adolescent stage leads to categories of potential exposures through toxins on the job and self-exposure. Adolescents may begin to work part-time jobs or enter vocational schools where they are exposed to workplace hazards. Few schools include any basic training curriculum for safety at work or with hobbies. An adolescent may decide to start smoking cigarettes or using toxic agents or drugs. Drug uses can lead to poor judgement and behaviors that increase the risk of exposures to occupational and environmental hazards (McClellan & Borak, 1998).
- **Adults.** Adults are most commonly exposed to toxic substances through their hobbies and/or occupations. At present, workplace injuries and fatalities are the most well-documented indices of adverse effects of the environment on health (Pope et al., 1995)

- **Elderly.** Although there are a wide individual variations, elderly populations have progressively decreasing function of cardiac, renal, pulmonary, and immune system processes. As a result of these changes, the elderly population may have impairments in host defenses, immune system function, and abilities to absorb and detoxify chemicals (Pope et al., 1995). Even at lower concentrations, any toxic substances the elderly population come in contact with will have a greater health impact as a result of these system impairments.

| **Nursing Considerations: Adolescent, Adult and Elderly** | |
|---|---|
| **U** | Does the individual smoke cigarettes or use any toxic agents or drugs? |
| **U** | Does the individual fish or net in any polluted or potentially polluted ponds, streams or other bodies of water? |
| **U** | Does the individual use any personal protective equipment while at work? |
| **U** | Are any physical or psychological signs and symptoms closely time related to certain activities? |
| **U** | Who else might be at risk? |

## 1.6 Describe psychosocial effects associated with environmental hazards

Chemical exposures and living near hazardous waste sites can be contributing factors for the development of psychosocial effects. The effects can be classified as biological, psychological and social in nature. The nurse includes both individual and environmental variables when assessing psycho social health.

High-level exposures to chemicals toxic to the nervous system (neurotoxins) are usually evidenced in occupational settings. However, there have been a few instances where individuals in the general population have experienced psychological and neurological symptoms from high dose exposures to neurotoxins. A well known example of chronic exposures occurred in Minamata, Japan where people in the bay area were poisoned by organic mercury which was traced back to an industrial discharge source. As a result of the exposures the population presented with deafness, ataxia, and paresthesias. Several classes of chemical hazards (i.e., heavy metals, solvents and pesticides) can cause behavioral and neurological effects. Heavy metals like lead and mercury may cause neurotoxic effects for example, lead exposure in childhood can cause reductions in IQ. Acute exposures to chemicals such as solvents can cause mild depression in the central nervous system and sensory impairments. An example is, exposure to methanol and visual disturbances (ATSDR, 1992). Acute exposures to pesticides such as organophosphates can bring about feelings of anxiety.

In addition, there are many psychological stresses associated with actual or potential exposure to a hazardous substance. Stress is a psychobiological process that is heavily influenced by individual appraisals. Stress can be viewed as the perceived substantial

imbalance between demands and response capabilities under circumstances where failure to meet the demands has important perceived consequences. Psychosocial stress through acute and chronic situations affects the body through a natural cascade of chemical reactions. Of the two exposures possibilities, chronic stress has been linked to affects on the cardiovascular and immune system.

Concerns regarding immediate and long-term health effects is a normal response to chemical exposures and can be an underlying cause of stress. The uncertainty associated with chemical exposures can lead to feelings of anxiety, hopelessness, anger and helplessness. This ambiguity is due to several factors. The source(s) of contamination are often invisible, the health outcomes can be delayed and unpredictable with the fear that they will be chronic and incurable with the compounding possibility of inter-generational impacts (Vyner, 1988). In addition, those affected by an exposure can experience a difficult time processing what has occurred, what can happen, and what should happen following the exposure (Schottenfeld, 1992).

Finally, severe exposure responses can result in sub clinical anxiety or depressive reactions. Anxiety reactions might include fear, stress, and hypervigilance. Whereas, depressive reactions include anhedonia, hopelessness, helplessness, worthlessness, guilt, psychomotor retardation, fatigue, anorexia, insomnia, difficulty concentrating, and suicidal ideation.

A variety of social factors can lead to a stress response for persons residing near a designated hazardous waste site and usually evolve around community and interpersonal conflicts regarding the site. Issues may include legal liability, loss of property values, extent of damage from the contamination and victim vs. responsible party problems. A special case of psychosocial stress occurs when individuals, families, and even entire communities exposed to toxic substances are voluntarily or involuntarily faced with the need for temporary or permanent relocation to protect their health and safety. Relocation has unique stresses like loss of homes, employment

**Nursing Considerations: Family Psychosocial**

Family

| | |
|---|---|
| **U** | Fear and uncertainty over the possible future health effects of exposure to hazardous waste |
| **U** | Feeling a loss of control over the present situation and the future |
| **U** | Anger over loss of security and safety within the community |
| **U** | Stress on family relationships |
| **U** | Change in sleep and eating patterns |
| **U** | Change in general outlook on life |
| **U** | Cognitive changes |
| **U** | Economic changes |

Community

| | |
|---|---|
| **U** | Confusion brought on by trying to understand various interpretations of highly technical information |
| **U** | Feelings of isolation or being alone as a result of others “looking down” on residents near hazardous waste sites |
| **U** | Increase in community conflict related to placing blame on others and determining what actions should be taken |

and familiarity with surroundings such as neighbors and friends. Control and choice are also contributing factors to the degree of stress encountered in the process of relocation.

## Learning Activity

Read one or both articles by Sullivan and Krieger (1992) and Ellis et al. (1992). Summarize, critique and discuss these articles in the clinical setting. Compare the readings to your experiences. Identify therapeutic interventions nurses can implement to assist families who have been exposed to environmental contaminants.

Identify 3 local referral resources in your community to seek assistance for people experiencing psychosocial effects. Locate information regarding coping with stress and conflict management. Discuss how these materials might assist an individual or community in addressing their psychosoical issues.

### 1.7 Identify environment–related symptoms and illnesses for individuals and families

Most environment–related diseases manifest themselves with nonspecific symptoms or

| Diseases and conditions | Industry/Occupation | Agent |
|---|---|---|
| **Hematologic** | | |
| Leukemia | Rubber industry<br>Workers exposed to Benzene<br>Radiologists, physicians, nurses | Unknown<br>Benzene<br>Ionizing Radiation |

| | | |
|---|---|---|
| **Cardiovascular** | | |
| Angina | Auto mechanics, foundry workers | Carbon Monoxide |
| Arrhythmia | Metal cleaning, refrigerator maintenance | Fluorocarbons |
| **Pulmonary** | | |
| Asthma | Jewelry, alloy, catalyst makers | Platinum |
| | Wood workers | Wood dust |
| | Printing industry | Gum arabic |
| | Bakers | Flour |
| | Plastic, dye, insecticide makers | Phthalic anhydride |
| Bronchitis | Refrigeration, fertilizer, oil-refining | Ammonia |
| | Beach industry | Chlorine |
| | Arc-welders, silo filler | Nitrogen oxides |
| | Paper, refrigeration oil refining industry | Sulfur dioxide |
| | | Asbestos |
| Lung Cancer | Asbestos industry, users | Arsenic |
| | Smelters | |
| **Neurologic** | | |
| Encephalitis | Batter, smelter, foundry workers | Lead |
| Neuropathy | Pesticide, pigment, pharmaceutical industries | Arsenic |
| | Rayon manufacturing | Carbon disulfide |
| Parkinson's disease | Battery manufacturing, welders | Manganese |
| **Miscellaneous** | | |
| Abdominal pain | Battery manufacturers, smelter, painter, ceramic workers, plumbers, welders | Lead |
| Cataract | Microwave, radar technicians | Microwaves |
| | Radiologists | Ionizing radiation |
| Dermatitis | Adhesives, sealants, leather tanning, fish packing | Irritants and allergens |
| Headache | Firefighters, dry cleaners, traffic control | Carbon monoxide |
| Hepatitis | Solvent users, dry cleaners, plastic industries | Carbon tetrachloride |
| | | Chloroform |
| | | Tetrachloroethane |
| | | Trichloroethene |
| Renal Failure | Battery manufacturing, plumbers, solders | Inorganic lead |

Source: Adapted from *Nursing, Health, and the Environment*, 1995 with permission from Nursing, Health, and the Environment, Copyright 1995 by the National Academy of Sciences. Courtesy of the National Academy Press, Washington, D.C.

look like common illnesses. Therefore, environmental etiologies are often overlooked. During the physical assessment nurses should carefully consider health history findings that identify and support possible exposure.

Individuals are exposed to hazardous substances through inhalation, ingestion and dermal contact and many organ systems can be affected through these exposure routes . The respiratory system is both a path of exposure and an affected target organ system. Asthma can be caused by more than 100 toxicants and may more can exacerbate it. Similarly,

cardiovascular changes and exacerbations of pre-existing cardiovascular conditions can result from hazardous substances like carbon monoxide, carbon disulfide, and nitrates. An overwhelming 90%of occupational skin disorders are from irritant and allergic contact dermatitis (ATSDR, 1992).

The previous table outlines diseases and conditions by organ system associated with various hazardous substances.

### 1.8 Utilize community assessment data to identify environmental health needs

In order to assess and recognize community sources of contamination, the nurse must have knowledge of gathering and interpreting demographic, environmental, occupational, and other types of information within the community. Nursing at the community level has the unique opportunity to look beyond the individual and family to the whole community system.

Community assessment begins with a description of the community. This includes, but is not limited to boundaries, ethnic groups, neighborhoods, and leaders. This type of information can be obtained through a community assessment utilizing tools such as windshield surveys, citizen surveys, observation, and/or data resources (see Appendix D). Sources of existing data include the Internet, public and community health agencies, libraries, medical records, newspapers, public records, interviews, participant observation, and surveys.

| **Nursing Considerations: Community** | |
|---|---|
| **U** | Location of homes near major industrial complexes or freeways, air and water quality |
| **U** | Demographics of community members |
| **U** | What populations are at greatest risk? |
| **U** | Are there any cultural issues that may be predisposing to certain exposures? |
| **U** | Who else might be at risk? |
| **U** | Where do children play? |
| **U** | What community resources are available? |

## Learning Activity

Using information obtained from the EPA Internet Site for your zip code (see Appendix B in Module I), identify the facilities and chemicals emitted for the zip code you entered. Answer the following questions:

(a) What hazards are present in the environment?
(b) What populations are at greater risk for health effects? Are there any cultural or belief practices, growth and development issues that increase their risk for exposures?
(c) What are the possible effects on the health of individuals, families, and communities of this type of hazard?
(d) What are the signs and symptoms of these health effects? (See Module III.)

++Complete a community assessment including environmental health surveys and questionnaires in Appendix D. What are the trends and patterns you discover for environmental health issues. Propose possible nursing strategies for addressing these concerns.

**Diagnosing**

**1.9 Formulate nursing diagnosis based on assessment data**

Nursing diagnoses can be developed using environmental etiologies derived from reviewing and analyzing pertinent data from the assessment phase. For example:

- Anxiety related to uncertainty of future health effects of exposure to asbestos.
- Altered growth and development,, related to exposure to lead contamination at two years of age.
- Knowledge deficit related to proper storage and disposal of hazardous common household products.

## Learning Activity

Using the information presented in the case study in Appendix A, develop at least two nursing diagnoses with environmental etiologies.

**Planning and Implementing**

**2.1 Plan and implement primary, secondary and tertiary preventive and intervention measures**

In the planning phase of the nursing process, a range of interventions are identified and plans for implementing those interventions are developed. The planned interventions may address the health problem through primary, secondary, or tertiary prevention. The table below provides more detail and examples of each level of prevention. Without attention to environmental factors, intervention plans are likely to focus on secondary- and tertiary-level activities (care and cure) rather than primary prevention strategies (Stanhope & Lancaster, 1988).

In the implementation phase of the nursing process, the nurse conducts the activities from the planning phase to promote health, and prevent or minimize illness and injury. In this phase of the process, the nurse may assume roles as an educator, communicator, advocate, and collaborator.

**2.2 Recognize and implement the nurse's role as educator related to environmental health**

Although nurses have traditionally served roles as one-to-one patient educators, this role can be expanded in relation to environmental health to include the family, small groups, and communities. Although effective environmental health education interventions require a knowledge of environmental health, nurses cannot be expected to be expert in all areas of the subject. Nurses need to have knowledge of sources for individual and community education, including texts, databases, and professional experts, and the skills and abilities to access these resources. Refer to Collaborator section (below) for listed Internet resources. Also see Module VI for an assessment and planning checklist for family and community education.

## Learning Activity

The following tables provide examples of resources that can be used by nurses in environmental hazard education. What level of prevention would be illustrated in using these tables for education?

Using the information from the case study in Appendix C, develop an intervention for the two other levels of prevention.

| | Definition | Individual/Family | Community |
|---|---|---|---|
| **Primary Prevention** | Activities that promote health and prevent diseases from occurring | | |
| | 1. Personal health services | Providing anticipatory guidance to expectant parents regarding risk factors, effects and prevention measures for childhood lead poisoning | Assuring that the community has access to city water lines and are not using water from private wells with lead piping |
| | 2. Environmental services | Conducting a home health assessment for lead hazards and providing education on interventions for a lead-safe home | Distributing educational information to neighborhood paint and hardware stores on how to safely remove lead-based paint and who to contact for assistance |
| | 3. Health behavior services | Teaching a child good hand washing techniques to prevent lead poisoning | Assuring that foundry workers have access to and use personal protective equipment (i.e., respirators) |
| **Secondary Prevention** | Interventions designed to detect disease and provide early treatment | Routinely screening children for lead poisoning in a pediatric clinic | Conducting free door-to-door blood lead screenings to children living in a high risk neighborhood |

| | | | |
|---|---|---|---|
| **Tertiary Prevention** | Interventions related to the treatment, care and rehabilitation of people exhibiting acute and chronic illness | Educating parents on methods to minimize health effects of lead poisoning by reducing or eliminating exposures and providing referral resources for lead abatement, developmental follow-up services, and parent support groups | Coordinating services with early education programs to develop a referral system for children diagnosed with lead poisoning that will assure they are assessed for developmental delays and receive appropriate follow-up educational services |

| | |
|---|---|
| Window cleaner | White vinegar and water |
| Drain opener | ½ c. salt and boiling water. Pour salt down the drain followed by boiling water. Flush with hot water |
| Tub and tile cleaner | Dip ½ of a lemon in borax and rub on site (Borax is toxic, use with caution) |
| Bleaching agent | 3% hydrogen peroxide |

Source: Adapted from *Hazardous Household Products*, 1995, California Public Health Foundation

## 2.3 Recognize and implement the nurse's role in environmental health communication

To facilitate individuals, families and communities in understanding and contributing information regarding the impact of their exposure to toxic substances, the nurse must also demonstrate astute skills in risk communication with respect to the health effects of environmental hazards. Usually, environmental health risk issues are multi-faceted, complex, and uncertain. This often presents situations that require immediate communication to occur with large groups that may be fearful, uncertain and potentially angry. It is cognitively more difficult for individuals to adapt to an invisible exposure such as a hazardous substance than it is to adapt to a visible and tangible event like a natural disaster. Nurses have an essential role in assuring that messages communicated to the public about health risks are clear, concise, and effective. The nurse's role as a communicator involves understanding and realizing the effect of how the event is being perceived and the availability or lack of support systems and coping mechanisms. The nurse's role as a communicator also involves ensuring and facilitating two-way communication between citizens and environmental professionals.

***Recipes for Safer Products***

The Seven Cardinal Rules of Risk Communication (Covello & Allen, 1988) (ATSDR, 1994) are listed below. Nursing implications related to each rule follow:

- Accept and involve the public as a partner. In context with traditional

nursing care, developing a trusting relationship with the client is basic to optimum nursing practice. Involving the community in the earliest possible stages is key to developing trust. Community input can: help agencies make better decisions, lead to a greater understanding of the particular risk, minimize stress, and maximize available community problem–solving resources.

- Plan carefully and evaluate your efforts. Careful planning involves preparing a key message that will address the public's requirements for various actions.
- Listen to the public's specific concerns. Conducting risk communication requires prudent listening skills. Listening skills can be enhanced through paraphrasing (reflecting), what has been said, being patient, and being open to new ideas.
- Be honest, frank and open. Trust and credibility are difficult to obtain; once lost, they are almost impossible to regain. Therefore, if you are unsure of an answer, just say so and always follow-up as promised.

***Safe Disposal of Hazardous Waste in the Home***
*Note: If possible, it is safest to use up all products*

| | |
|---|---|
| Insect sprays, rodent bait | Follow product disposal instructions, or rinse the container with water 3 times and use the rinse as a pesticide. Wrap rinsed container in newspaper and discard with trash |
| Bleach, disinfectant, drain and toilet cleaners | Dilute any unused portions with lots of water and flush down the drain. |
| Paint and varnish | Let it evaporate outside (away from children and pets) until it becomes solid. |
| Batteries, motor oil, brake fluid | Discard container in trash<br>Recycle at auto center or retailer |

Source: Adapted from *Hazardous Materials: A Citizen's Orientation*, 1990, FEMA, EPA, DOT

- Work with other credible sources. When collaborating with other agencies, it is most beneficial to work in concert with those organizations. Conflicts and disagreements among organizations break community trust and make communication with the public much more difficult.
- Meet the needs of the media. The media are usually more interested in politics than risk, simplicity than complexity, danger than safety.
- Speak clearly and with compassion. Never let your efforts prevent your acknowledging the tragedy of an illness, injury, or death. People can

understand risk information, but they still may not agree with you; some people will not be satisfied.

### 2.4 Recognize the nurse's role related to environmental health advocacy

The nurse's role as an advocate supports and provides a voice for individual, family and community efforts for services that improve quality of care and/or policy development. Empowerment refers to an individual's or community's capacity to respond to an environmental health threat and a formal institution's capacity for responding to citizens and involving them in the decision making process. Within the nurse's role as an advocate is facilitating the empowerment of citizens so they can be involved in decision making processes (refer to Module VI for more information on community involvement and empowerment).

### 2.5 Recognize and implement the nurse's role of collaborator for environmental health

Collaboration involves an interdisciplinary approach to the individual, family and community. Nurses, utilizing skills in listening, communicating, and critical thinking, are uniquely qualified to assess triage needs and follow through with appropriate referrals. In addition, through collaboration nurses work to collect input from appropriate resources and organizations and utilize this knowledge as a basis for decision making.

### 3.0 Identify indicators for referral to a specialist

Indicators for a referral by the nurse to a specialist are determined by recognizing the potential environmental hazards and sentinel health events. These indicators can be identified by completing a health assessment and exposure history.

- Physical Indicators

  Once the exposure history has been completed, a positive response to any question on the form would indicate the need for more in-depth history taking. A negative response would not rule out a toxic exposure, however it may not indicate the need for immediate action.

- Psychological Indicators

  Maladaptive Coping Behaviors — observe for symptoms of depression, anxiety, post traumatic stress disorder, alcohol and substance abuse, marital discord, increasing family dysfunction, denial, multiple somatic complaints and withdrawal from the community.

- Referral Resources

  The nurse must be knowledgeable of referral resources, maximize triage skills for clients with potential environmental etiologies, and communicate critical follow-up information to all individuals. Nurses are encouraged to build a

network of occupational and environmental experts for information, consultation, and referral. An excellent source for referral information and other resources includes all state and local health and environmental agencies. Some additional resources are listed below.

**American Association of Occupational Health Nurses**
2920 Brandywine Road
Suite 100
Atlanta, GA 30341-4146
(770) 455-7757
AAOHN is a professional association for occupational and environmental health nurses who specialize in on-the-job health care for the nation's workers.

**American Association of Poison Control Centers**
3800 Reservoir Road, NW
Washington, D.C. 20007
(202) 784-4666
The AAPCC has established standards for the poison controls nationwide and offers a hotline for immediate information.

**American College of Occupational and Environmental Medicine**
55 West Seegers Road
Arlington Heights, IL 60005
(708) 228-6850
The ACOEM is an association of physicians that work to educate peers, the public and other organizations about issues related to occupational and environmental health.

**Association of Occupational and Environmental Clinics**
1010 Vermont Avenue, NW #513
Washington, D.C. 20005
(202) 347-4976
http://152.3.65.120/oem/aoec.htm
The Association of Occupational and Environmental Clinics (AOEC) is a network of clinics that provides professional training, community education, exposure and risk assessment, clinical evaluations, and consultative services (ATSDR, 1992). The 60+ member Clinics (as of 11/98) are listed on the web site, with details of their addresses, phone numbers, topics of expertise and faculty members' names.

**Agency for Toxic Substances and Disease Registry**
1600 Clifton Rd., NE
Mail Stop E-28
Atlanta, GA 30333
(404) 639-0501
1-888-42ATSDR
http://www.atsdr.cdc.gov
The mission of the ATSDR, as an agency of the U.S. Department of Health and Human Services, is to prevent exposure and adverse human health effects and diminished quality of life associated with exposure to

hazardous substances from waste sites, unplanned releases, and other sources of pollution present in the environment.

**Centers for Disease Control and Prevention**
1600 Clifton Rd., NE
Atlanta, GA 30333
(404) 639-3286
http://www.cdc.gov
CDC is charged with protecting public health nationwide through leadership and direction in the prevention and control of diseases.

**U. S. Environmental Protection Agency**
401 M Street, SW.
Washington, D.C. 20460
(202) 260-2090
http://www.epa.gov
The mission of the U.S. EPA is to protect human health and to safeguard the natural environment — air, water, and land — upon which life depends. The EPA abates and controls pollution through research, monitoring, setting standards, and enforcement activities.

**National Institute for Occupational Safety and Health**
200 Independence Avenue, SW.
Washington, D.C. 20201
(800) 356-4674
http://www.cdc.gov/niosh/homepage.html
NIOSH works to assure safety and health at work for all people through research and prevention.
NIOSH funds Education Resource Centers which are involved in research, administration of graduate training programs, continuing education programs for safety and health professionals, and community outreach programs.

**Occupational Safety and Health Administration**
Office of Administrative Services
200 Constitution Avenue, NW
Room N-310
Washington, D.C. 20210
(202) 219-4667
OSHA was created to enforce health and safety in the workplace across the nation. OSHA works with employers to reduce workplace hazards and implement safety and health programs through the development and enforcement of safety and health standards.

**Pediatric Environmental Health Specialty Units**
1010 Vermont Avenue, NW #513
Washington, D.C. 20005
(202) 347-4976
As part of a cooperative agreement with ATSDR, the AOEC began a pilot project forming three Pediatric Environmental Health Specialty Units (PEHSUs). The pilot units focus on increasing communication and collaboration among pediatric clinics and AOEC clinics and providing

instruction for local health care providers about the special concerns of medical interventions related to environmental health that might be needed by various pediatric age groups. The three specialty units are located at Harborview Medical Center at the University of Washington, the Occupational and Environmental Health Center at Cambridge Hospital in Massachusetts, and Mount Sinai Pediatric Environmental Health Center. Additional PEHSUs are planned.

**Pesticide Education Center**
P.O. Box 420870
San Francisco, CA 94142-0870
(415) 391-8511
The PEC works with community groups, workers, individuals and others concerned about health risks related to pesticides.

## Learning Activity

Contact one of the environmental health referral resources listed in this section. Obtain information about the agency, how they work with individuals, families and communities on environmental health issues. Collect written material about the agency and share with your classmates.

Using the case study in Appendix C and the Exposure History information gathered from the initial learning activity, complete a nursing care plan. As part of your planning activities, identify at least three appropriate referral sources, how you located them, and a brief description of the services each one provides.

## Evaluating

Evaluation can be conducted in many levels of the nursing process. The evaluation phase involves re-assessment to determine the impact or effectiveness of interventions. Maintaining communication and trust with individuals, families, and communities allows the nurse to evaluate the impact of interventions and continue coordination and collaboration of service. During the evaluation process, the effectiveness of strategies are determined and modified as appropriate. Some methods of evaluation include reviewing health indicators, records, database resources, and surveillance information.

## Teaching Methods

The objectives of the module can be achieved through lecture, small group discussion, assigned readings, field experiences and other creative strategies. Learning activities and a case study (Appendices D and E) have been included to facilitate relevant application of the module's content to the student's community.

## Evaluation

Standards for satisfactory attainment of the objectives may be evaluated through examination, verbal questioning, and evaluation of written assignments.

## References


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## Appendix A: A Child with Exposure to a Weed Killer

A 9-year-old girl is bought into the clinic with a rash on her face and arms. The rash is characterized by small blisters with surrounding erythema. The child states that her head feels funny, she has a headache, stomach ache, and has been nauseated and vomiting for the past 12 hours. Her temperature is normal. A review of the chart indicates no known allergies or past medical problems. Her immunizations were all given at age-appropriate times and are current for her age. She exhibits a normal pattern of growth and development, both physically and psychosocially.

The child's father states he noticed the rash last evening and by the morning it had spread from her face to both her arms. You notice the girl's younger brother who is 3 years old and usually very active to be quiet and pale. When questioned, the father states the child has been more tired than usual in the last two days and doesn't seem to want to eat.

The family home is located in a development that is bordered by a public park operated by the county. The park has play areas for the children, basketball and tennis courts, and a fitness trail. The county periodically sprays the area with a weed killer. Notices regarding the spraying appear in the local paper after the spraying has occurred. You discover during your intake and assessment that the children were playing in the park the day of spraying and the next morning.

1. Classify this health problem as to the type environmental health hazard.

2. What questions would you ask the father to obtain a more complete picture of the potential environmental exposures during your history taking? What other family members should be included in your exposure assessment?

3. Describe the growth and development factors of the family members that may increase their potentials for exposures.

4. What safety measures should the nurse discuss with individuals, the family, and the community regarding this issue?

## Appendix B: Environmental Exposure History Forms

# Exposure History Form

## Part 1. Exposure Survey

*Please circle the appropriate answer.*

**Name:** **Date:**

**Birthdate:** **Sex:** **M** **F**

1. Are you currently exposed to any of the following?

metals *no* *yes*

dust or fibers *no* *yes*

chemicals *no* *yes*

fumes *no* *yes*

radiation *no* *yes*

loud noise, vibration, extreme heat or cold *no* *yes*

biologic agents *no* *yes*

2. Have you been exposed to any of the above *in the past?* *no* *yes*

3. Do any household members have contact with metals, dust, fibers, chemicals, fumes, radiation, or biologic agents? *no* *yes*

If you answered yes to any of the items above, describe your exposure in detail—how you were exposed; to what you were exposed. If you need more space, please use a separate sheet of paper.

4. Do you know the names of the metals, dusts, fibers, chemicals, fumes, or radiation that you are/were exposed to? *no* *yes* → *If yes*, list them below.

5. Do you get the material on your skin or clothing? *no* *yes*

6. Are your work clothes laundered at home? *no* *yes*

7. Do you shower at work? *no* *yes*

8. Can you smell the chemical or material you are working with? *no* *yes*

9. Do you use protective equipment such as gloves, masks, respirator, hearing protectors? *no* *yes* → If *yes*, list the protective equipment used.

10. Have you been advised to use protective equipment? *no* *yes*

11. Have you been instructed in the use of protective equipment? *no* *yes*

12. Do you wash your hands with solvents? *no* *yes*

13. Do you smoke at the workplace? *no* *yes* At home? *no* *yes*

14. Do you eat at the workplace? *no* *yes*

Developed by ATSDR in cooperation with NIOSH, 1990

15. Do you know of any coworkers experiencing similar or unusual symptoms?

*no* *yes*

16. Are family members experiencing similar or unusual symptoms?

*no* *yes*

17. Has there been a change in the health or behavior of family pets?

*no* *yes*

18. Do your symptoms seem to be aggravated by a specific activity?

*no* *yes*

19. Do your symptoms get either worse or better at work?

*no* *yes*

at home?

*no* *yes*

on weekends?

*no* *yes*

on vacation?

*no* *yes*

20. Has anything about your job changed in recent months (such as duties, procedures, overtime)?

*no* *yes*

If you answered *yes* to any of the questions, please explain.

## Part 2. Work History

**A. Occupational Profile**

**Name:**
**Birthdate:** **Sex:** M F

The following questions refer to your current or most recent job:

Job title: Describe this job:

Type of industry:

Name of employer:

Date job began:

Are you still working in this job?

Yes No

If no, when did this job end?

Fill in the table below listing all jobs you have worked including short-term, seasonal, part-time employment, and military service. Begin with your most recent job. Use additional paper if necessary.

| Dates of Employment | Job Title and Description of Work | Exposures* | Protective Equipment |
|---|---|---|---|
| | | | |

*List the chemicals, dusts, fibers, fumes, radiation, biologic agents (i.e., molds, viruses) and physical agents (i.e., extreme heat, cold, vibration, noise) that you were exposed to at this job.

Have you ever worked at a job or hobby in which you came in contact with any of the following by breathing, touching, or ingesting (swallowing)? If yes, please check the box beside the name.

- ❑ Acids
- ❑ Alcohols (industrial)
- ❑ Alkalies
- ❑ Ammonia
- ❑ Arsenic
- ❑ Asbestos
- ❑ Benzene
- ❑ Beryllium
- ❑ Cadmium
- ❑ Carbon tetrachloride
- ❑ Chlorinated naphthalenes
- ❑ Chloroform
- ❑ Chloroprene
- ❑ Chromates
- ❑ Coal dust
- ❑ Dichlorobenzene
- ❑ Ethylene dibromide
- ❑ Ethylene dichloride
- ❑ Fiberglass
- ❑ Halothane
- ❑ Isocyanates
- ❑ Ketones
- ❑ Lead
- ❑ Manganese
- ❑ Mercury
- ❑ Methylene chloride
- ❑ Nickel
- ❑ PBBs
- ❑ PCBs
- ❑ Perchloroethylene
- ❑ Pesticides
- ❑ Phenol
- ❑ Phosgene
- ❑ Radiation
- ❑ Rock dust
- ❑ Silica powder
- ❑ Solvents
- ❑ Styrene
- ❑ Talc
- ❑ Toluene
- ❑ TDI or MDI
- ❑ Trichloroethylene
- ❑ Trinitrotoluene
- ❑ Vinyl chloride
- ❑ Welding fumes
- ❑ X rays
- ❑ Other (specify)

Developed by ATSDR in cooperation with NIOSH, 1992

**B. Occupational Exposure Inventory** *Please circle the appropriate answer.*

1. Have you ever been off work for more than one day because of an illness related to work? *no* *yes*
2. Have you ever been advised to change jobs or work assignments because of any health problems or injuries? *no* *yes*
3. Has your work routine changed recently? *no* *yes*
4. Is there poor ventilation in your workplace? *no* *yes*

## Part 3. Environmental History *Please circle the appropriate answer.*

1. Do you live next to or near an industrial plant, commercial business, dump site, or nonresidential property? *no* *yes*
2. Which of the following do you have in your home?
   *Please circle those that apply.*

| | | |
|---|---|---|
| Air conditioner | Air purifier | Central heating (gas or oil?) |
| Gas stove | Electric stove | Fireplace |
| Wood stove | Humidifier | |

3. Have you recently acquired new furniture or carpet, refinished furniture, or remodeled your home? *no* *yes*
4. Have you weatherized your home recently? *no* *yes*
5. Are pesticides or herbicides (bug or weed killers; flea and tick sprays, collars, powders, or shampoos) used in your home or garden, or on pets? *no* *yes*
6. Do you (or any household member) have a hobby or craft? *no* *yes*
7. Do you work on your car? *no* *yes*
8. Have you ever changed your residence because of a health problem? *no* *yes*
9. Does your drinking water come from a private well, city water supply, or grocery store?

10. Approximately what year was your home built?

If you answered *yes* to any of the questions, please explain.

## Sample: ATSDR Taking an Environmental Exposure History Form

(Source: ATSDR Case Study in Environmental Medicine: Taking an Exposure History 1992).

*Appendix*

# *Consultation, Referral, and Followup*

# 1. Consultation Resources

**American College of Occupational and Environmental Medicine**

A list of board-certified occupational physicians and members of the College of Occupational Medicine can be obtained from The American College of Occupational and Environmental Medicine.

55 W. Seegers
Arlington Heights, IL 60005
(708) 228-6850

**American Board of Medical Toxicology**

The American Board of Medical Toxicology evaluates and certifies physicians in medical toxicology.

National Office
Lewis Goldfrank, MD
New York Poison Center
Bellevue Hospital
27th Street & 1st Avenue
New York, NY 10016
(212) 561-3346

**Association of Occupational and Environmental Clinics**

The Association of Occupational and Environmental Clinics (AOEC) is a network of clinics affiliated with medical schools throughout the United States. Member clinics provide professional training, community education about toxic substances, exposure and risk assessment, clinical evaluations, and consultation. A lending library of training materials is maintained for use by members. Membership is open to any person who shares the goals of the Association. Clinicians can contact the AOEC office for referrals (see pages 4-8).

Ed Kelly, Executive Director
1010 Vermont Avenue, Suite 513
Washington, DC 20005
(202) 347-4976

**Teratogen Exposure Registry and Surveillance (TERAS)**

TERAS is a network of geneticists and pathologists studying human embryos and fetuses exposed to teratogens. TERAS maintains information networks for consultation and evaluations.

Frederick Bieber, PhD
Department of Pathology
Brigham and Women's Hospital
75 Francis Street
Boston, MA 02115
(617) 732-6507

**University programs in occupational health, industrial hygiene, or toxicology**

The schools of public health or schools of medicine at universities function as resources to local communities. In addition, some hospitals have occupational or environmental health clinics that accept referrals.

**MotherRisk Program**

The MotherRisk Program will counsel callers about the safety of an exposure to drugs, chemicals, or radiation during pregnancy or breast-feeding. The team of physicians and information specialists gives advice on whether medications, X rays, or chemicals in the work environment will harm the developing fetus or breast-fed baby. Genetic counseling is available from the Genetic Department of the Hospital for Sick Children.

Gideon Koren, MD, Director
Hospital for Sick Children
555 University Avenue
Toronto, Ontario M5G1X8
(416) 813-6780

## 2. Education Resource Centers (ERCs)

The National Institute for Occupational Safety and Health (NIOSH) has established centers for learning about occupational safety and health throughout the United States. The Educational Resource Centers (ERCs) are located within 32 universities in 14 states. The ERCs conduct training courses on occupational and environmental medicine topics (CME credits available).

**ALABAMA**
Deep South Center for Occupational Health and Safety, University of Alabama at Birmingham
Elizabeth Murray, MPH
Continuing Education
(205) 934-7178

**CALIFORNIA**
Northern California ERC Center for Occupational and Environmental Health, University of California, Berkeley
Barbara Plog, MPH, CIH, CSP
Continuing Education
(510) 231-5647

Southern California ERC
University of Southern California
Ramona Cayuela
Continuing Education
(213) 740-3998

**ILLINOIS**
Illinois ERC, Occupational Health and Safety Center
University of Illinois, Chicago
Leslie Nickels, MEd
(312) 413-0459

**MARYLAND**
Johns Hopkins ERC, Johns Hopkins University
Department of Environmental Health Sciences
Dr. Jacqueline Corn
Continuing Education
(410) 955-2609

**MASSACHUSETTS**
Harvard Educational Resource Center
Daryl Bichel
Continuing Education
(617) 432-3314

**MICHIGAN**
Michigan ERC, University of Michigan
Center for Occupational Health and Safety
Randy Rabourn, Continuing Education
(313) 936-0148

**MINNESOTA**
Midwest Center for Occupational Health and Safety
University of Minnesota
Jeanne Ayers, Continuing Education
(612) 221-3992

**NEW YORK/NEW JERSEY**
UMDNJ Robert Wood Johnson Medical School
Audrey Gotsch, DrPH,
Coordinator, EOHSI/CET
(908) 932-0220

**NORTH CAROLINA**
Occupational Safety and Health ERC
University of North Carolina
Larry Hyde, Continuing Education
(919) 962-2101

**OHIO**
University of Cincinnati ERC
Department of Environmental Health
Judy Jarrell, MA, EdD,Continuing Education
(513) 558-1729

**TEXAS**
SW Center for Occupational Health and Safety
Pam Parker, MEd, Continuing Education
(713) 792-4648

**UTAH**
Rocky Mountain Center for Occupational and Environmental Health, University of Utah
Connie Crandall, Continuing Education
(801) 581-5710

**WASHINGTON**
NW Center for Occupational Health and Safety
University of Washington
Sharon Morris, Continuing Education
(206) 543-1069

**NIOSH**
Division of Training and Manpower Development
Marsha Striley, Training Registrar
(513) 533-8225

## 3. Association of Occupational and Environmental Clinics (AOEC)

The professionals in the AOEC act as consultants regarding treatment of persons exposed to hazardous substances.

### ALABAMA

**Birmingham**

University of Alabama at Birmingham
930 20th Street South
(205) 934-7303 FAX (205) 975-4377
Timothy Key, MD, MPH
Alt. Contact
Brian G. Forrester, MD, MPH

### CALIFORNIA

**Davis**

Occupational & Environmental Health Clinic
University of California at Davis
ITEH
Davis, CA 95616
(916) 752-3317 FAX (916) 752-5300
Stephen McCurdy, MD

**San Francisco**

Occupational Health Clinic
San Francisco General Hospital
1001 Potrero Avenue
Building 9 Room 109
San Francisco, CA 94110
(415) 206-5391 FAX (415) 206-8949
Patricia Quinlan, MPH
Alt. Contact
Diane Liu, MD, MPH

Occupational & Environmental Medicine Clinic
University of California at San Francisco
400 Parnassus Avenue A585
San Francisco, CA 94143
(415) 476-1841 FAX (415) 476-6426
Robert Harrison, MD

### COLORADO

**Denver**

National Jewish Center of Immunology and Respiratory Medicine
1400 Jackson Street
Denver, CO 80206
(303) 398-1520 FAX (303) 398-1452
Kathleen Kreiss, MD
Alt. Contact
Cecile Rose, MD, MPH

### CONNECTICUT

**New Haven**

Yale Occupational/Environmental Medicine Program
333 Cedar Street
New Haven, CT 06510
(203) 785-5885 FAX (203) 785-7391
Mark Cullen, MD

**Farmington**

University of Connecticut Occupational Medicine Program
263 Farmington Avenue
Farmington, CT 06030
(203) 679-2366 FAX (203) 679-4587
Eileen Storey, MD, MPH
Alt. Contact
Michael Hodgson, MD, MPH

**Waterbury**

Waterbury Occupational Health
140 Grandview Avenue, Suite 101
Waterbury, CT 06708
(203) 573-8114 FAX (203) 755-3823
Gregory McCarthy, MD, MPH

### WASHINGTON, D.C.

Division of Occupational and Environmental Medicine
School of Medicine, George Washington University
2300 K Street, NW
Washington, DC 20037
(202) 994-1734 FAX (202) 994-0247
Laura Welch, MD
Alt. Contact
Rosemary Sokas, MD

### GEORGIA

**Atlanta**

Division of Environmental and Occupational Health
Emory University School of Public Health
1599 Clifton Road, NE
Atlanta, GA 30329
(404) 727-3697 FAX (404) 727-8744
Clinic: (404) 248-5978
Howard Frumkin, MD, MPH

### ILLINOIS

**Chicago**

Occupational Medicine Clinic
Cook County Hospital
720 South Wolcott
Chicago, IL 60612
(312) 633-5310 FAX (312) 633-6442
Stephen Hessl, MD, MPH
Alt. Contacts
Ann Naughton, RN
Peter Orris, MD, MPH

## Occupational and Environmental Clinics (cont'd)

### ILLINOIS (continued)

Managed Care Occupational Health Program
Mount Sinai Hospital Medical Center
2720 West 15th Street
King Building Room 534
Chicago, IL 60608
(312) 650-6480 FAX (312) 650-6213
Edward Mogabgab, MD

University of Illinois Occupational Medicine Program
840 S. Wood M/C 678, P.O. Box 6998
Chicago, IL 60612
(312) 996-2592 FAX (312) 413-0122
Linda Forst, MD, MS, MPH
Alt. Contact
Stephen Hessl, MD, MPH

### IOWA

#### Iowa City

University of Iowa, Occupational Medicine Clinic
Department of Internal Medicine, College of Medicine
T304, GH
Iowa City, IA 52242
(319) 356-8269 FAX (319) 356-8608
David Schwartz, MD, MPH

### KENTUCKY

#### Lexington

University of Kentucky Occupational Medicine Program
Warren Wright Medical Plaza
800 Rose Street
Lexington, KY 40536-0084
(606) 257-5166 FAX (606) 258-1038
Terence R. Collins, MD, MPH
Alt. Contact
Chaim Cohen, MD, MPH

### LOUISIANA

#### New Orleans

Ochsner Center for Occupational Health
1514 Jefferson Highway
New Orleans, LA 70121
(504) 838-3955 FAX (504) 838-5721
Peter G. Casten, MD, MPH
Alt. Contact
Douglas A. Swift, MD, MPH

### MAINE

#### Portland

Center for Health Promotion
576 St. John Street
Portland, ME 04102
(207) 774-7751 FAX (207) 828-5140
Stephen Shannon, DO, MPH
Alt. Contact
Sal Upham, MD, MPH

### MARYLAND

#### Baltimore

Johns Hopkins University
Center of Occupational and Environmental Health
5501 Hopkins Bayview Circle
Baltimore, MD 21224
(410) 550-2322 FAX (410) 550-2090
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Occupational Health Project
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University of Maryland School of Medicine
405 Redwood Street, 2nd Floor
Baltimore, MD 21201
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James Keogh, MD

### MASSACHUSETTS

#### Boston

Massachusetts General Hospital
Occupational Medicine Clinic
32 Fruit Street
Boston, MA 02114
(617) 726-2721 or (617) 726-2741
L. Christine Oliver, MD, MPH, MS
Alt. Contact
Elisha Atkins, MD

#### Cambridge

Occupational and Environmental Health Center
Cambridge Hospital
1493 Cambridge Street
Cambridge, MA 02139
(617) 498-1580 FAX (617) 498-1671
Rose Goldman, MD, MPH

#### South Braintree

Center for Occupational and Environmental Medicine
Massachusetts Respiratory Hospital
2001 Washington Street
South Braintree, MA 02184
(617) 848-2600 FAX (617) 849-3290
Dianne Plantamura, Coordinator
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#### Worcester

Occupational Health Service
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University of Massachusetts Medical Center
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Worcester, MA 10605
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Glenn Pransky, MD, MOH
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Kathleen Rest, PhD, MPA

## Occupational and Environmental Clinics (cont'd)

### MICHIGAN

#### Ann Arbor

Occupational Health Program
School of Public Health, University of Michigan
Ann Arbor, MI 48109-0010
(313) 764-2594 FAX (313) 763-8095
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Alfred Franzblau, MD, MPH

#### Detroit

Division of Occupational Health
Wayne State/Department of Family Medicine
4201 St. Antoine, Suite 4-J
Detroit, Mi 48201
(313) 577-1420 or (313) 543-4410 FAX (313) 577-3070
Ray Demers, MD, MPH
Alt. Contact
Mark Upfal, MD, MPH

#### East Lansing

Michigan State University
Department of Medicine
B338 Clinical Center
East Lansing, MI 48824-1317
(517) 353-1846 FAX (517) 336-2759
Kenneth Rosenman, MD, MPH

#### Lansing

Occupational Health Service
St. Lawrence Hospital Work and Health Institute
1210 W. Saginaw
Lansing, MI 48915
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John McPhail

#### Southfield

Center for Occupational and Environmental Medicine
15901 West Nine Mile Road
Southfield, MI 48075
(313) 559-6663 FAX (313) 559-8254
Margaret Green, MD, MPH
Alt. Contact
Michael Harbut, MD, MPH

### MINNESOTA

#### Fridley

Columbia Park Medical Group
6401 University Avenue, NE #200
Fridley, MN 55432
(612) 571-1005 FAX (612) 571-3008
Donald Johnson, MD
Alt. Contact
Joan Baskfield, RN, COHN

#### St. Paul

Ramsey Clinic
Occupational and Environmental Health and Occupational Medicine Residency Training
640 Jackson Street
St. Paul, MN 55101-2595
(612) 221-3771 FAX (612) 221-3874
Paula Geiger
Alt. Contact
William H. Lohman, MD

### NEW JERSEY

#### Piscataway

Environmental and Occupational Health Clinical Center
Environmental and Occupational Health Sciences Institute
UMDNJ-Robert Wood Johnson Medical School
P.O. Box 1179
Piscataway, NJ 08855-1179
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### NEW YORK

#### Finger Lakes

Finger Lakes Regional Occupational Health Program
435 East Henrietta Road, Room 4F-12
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Marc Utell, MD

#### Latham

Eastern New York Occupational Health Program
1201 Troy Schenectady Road
Latham, NY 12110
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#### New York

Mount Sinai Medical Center
Irving J. Selikoff Occupational Health Clinical Center
P.O. Box 1057/1058 Gustave Levy Place
New York, NY 10029
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Stephen Mooser, MPH
Alt. Contact
Stephen Levin, MD

HHC Bellevue Occupational and Environmental Health Clinic
Bellevue Hospital, Room CD349
27th Street & First Avenue
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George Friedman-Jimenez, MD

## Occupational and Environmental Clinics (cont'd)

### NEW YORK (continued)

**Stony Brook**

Stony Brook Occupational Medicine Center
HSC, L 3-086
State University of New York
Stony Brook, NY 11794
(516) 444-2167 FAX (516) 444-7525
Wajdy Hailoo, MD

**Syracuse**

Central New York Occupational Health Clinic Center
6712 Brooklawn Parkway, Suite 204
Syracuse, NY 13211-2195
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Michael B. Lax, MD, MPH

### NORTH CAROLINA

**Durham**

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Division of Occupational and Environmental Medicine
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Durham, NC 27710
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### OHIO

**Cincinnati**

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University of Cincinnati College of Medicine
Eden and Bethesda Avenue
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Douglas Linz, MD, MS;

Greater Cincinnati Occupational Health Center
Jewish Hospital Evandale
10475 Reading Road, Suite 405
Cincinnati, OH 45241
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Harriet Applegate
Alt. Contact
Margaret Atterbury, MD, MPH

**Cleveland**

Occupational/Environmental Health Clinic
Department of Family Medicine
MetroHealth Medical Center
2500 MetroHealth Drive
Cleveland, OH 44109-1998
(216) 459-5737 FAX (216) 459-3297
Kathleen Fagan, MD
Alt. Contact
Seth Foldy, MD

### OKLAHOMA

**Oklahoma City**

University Occupational Health Services
Oklahoma Memorial Hospital
800 NE 13th Street, Room 5E 109
Oklahoma City, OK 73104
(405) 271-3100 FAX (405) 271-4125
Roy DeHart, MD, MPH
Alt. Contact
Lynn Mitchell, MD, MPH

**Tulsa**

WorkMed
1923 East 21st Street
Tulsa, OK 74114
(918) 627-4646 FAX (918) 669-4425
James W. Small, MD, MPH
Alt. Contact
Andrew Floren, MD, MPH

### PENNSYLVANIA

**Philadelphia**

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Medical College of Pennsylvania
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Philadelphia, PA 19129
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Harriett Rubenstein, JD, MPH

**Pittsburgh**

Occupational and Environmental Medicine Program
University of Pittsburgh School of Medicine
130 DeSoto Street, Room A729
Pittsburgh, PA 15261
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Betty Goodman-Klein, CRNP

**Willow Grove**

Center for Occupational and Environmental Health
3901 Commerce Avenue, Suite 101
Willow Grove, PA 19090-1109
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Jessica Herzstein, MD, MPH

### RHODE ISLAND

**Pawtuckett**

Memorial Hospital of Rhode Island
Occupational Health Service
Brown University Program in Occupational Medicine
Division of General Internal Medicine
111 Brewster Street
Pawtuckett, RI 02860
(401) 729-2859 FAX (401) 722-0198
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## Occupational and Environmental Clinics (cont'd)

### TEXAS

#### Tyler

Texas Institute of Occupational Health
Highway 271 & 155
Tyler, TX 75710
(903) 877-7262 FAX (903) 877-2221
Jeffrey Levin, MD

### UTAH

#### Salt Lake City

Rocky Mountain Center for Occupational and Environmental Health
University of Utah
Building 512
Salt Lake City, Utah 84112
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### WASHINGTON

#### Seattle

Occupational Medicine Program
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325 9th Avenue ZA-66
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### WEST VIRGINIA

#### Huntington

Division of Occupational and Environmental Health
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Marshal University School of Medicine
1801 6th Avenue
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(304) 696-7045 FAX (304) 696-7048
Chris McGuffin, MS

### CANADIAN CLINICS

### ALBERTA

University of Alberta Faculty of Medicine
13-103 Clinical Science Building
Edmonton, Alberta, CD T6G 2G3
(403) 492-7849 FAX (403) 492-0364
Linda Cocchiarella, MD, MSc.
Tee Guidotti, MD, MPH

### MANITOBA

MFL Occupational Health Centre, Inc.
102-275 Broadway
Winnepeg, Manitoba, CD R3C 4M6
(204) 949-0811 FAX (204) 956-0848
Judy Cook, Executive Director
Alt. Contact
Ahmod Randeree, MD

# 4. AAPCC-Certified Regional Poison Control Centers

Poison Control Centers were established in 1953 to help physicians deal with poisonings of adults and children in the United States. In 1983, the American Association of Poison Control Centers (AAPCC) was established as the professional organization for Poison Control Centers. The Regional Poison Control Centers can act as valuable resources in providing information about the toxicity and health effects of hazardous exposures involved in poisonings.

## ALABAMA

### Birmingham

Children's Hospital of Alabama Poison Control Center
(205) 939-9201
(800) 292-6678 (in state)
(205) 933-4050

## ARIZONA

### Phoenix

Samaritan Regional Poison Center
(602) 253-3334

### Tucson

Arizona Poison and Drug Information Center
(800) 362-0101 (in state)
(602) 626-6016

## CALIFORNIA

### Fresno

Fresno Regional Poison Control Center
(800) 346-5922 (central CA only)
(209) 445-1222

### Los Angeles

Los Angeles Regional Drug and Poison Control Center
(800) 825-2722 (physicians)
(800) 777-6476
(213) 222-8086
(213) 222-3212
(714) 634-5988

### Sacramento

University of California, Davis Medical Center Regional Poison Control Center
(800) 342-9293 (Northern CA only)
(916) 734-3692 (in state)

### San Diego

San Diego Regional Poison Control Center
(619) 543-6000
(800) 876-4766 (619 area only)

### San Francisco

SF Bay Area Regional Poison Control Center
(800) 523-2222 (415 and 707 area codes only)

### San Jose

Santa Clara Valley Medical Center Regional Poison Center
(408) 299-5112
(800) 662-9886 (CA only)

## COLORADO

### Denver

Rocky Mountain Poison and Drug Center
(303) 629-1123
(800) 332-3073 (in state)

## DISTRICT OF COLUMBIA

### Washington

National Capitol Poison Control Center
(202) 625-3333
(202) 362-8563 (TTY)

## FLORIDA

### Tampa

Florida Poison Information Center and Toxicology Resource Center
(800) 282-3171 (in state)
(813) 253-4444

## GEORGIA

### Atlanta

Georgia Regional Poison Control Center
(800) 282-5846 (in state)
(404) 616-9000
(404) 616-9287 (TTY)

## INDIANA

### Indianapolis

Indiana Poison Center
(800) 382-9097 (in state)
(317) 929-2323

## KENTUCKY

### Louisville

Kentucky Regional Poison Center of Kosair Children's Hospital
(800) 722-5725 (in state)
(502) 589-8222

## Poison Control Centers (cont'd)

### MARYLAND
**Baltimore**
Maryland Poison Center
(800) 492-2414 (in state)
(410) 528-7701

### MASSACHUSETTS
**Boston**
Massachusetts Poison Control System
(800) 682-9211 (in state)
(617) 232-2120

### MICHIGAN
**Detroit**
Poison Control Center
(313) 745-5711

**Grand Rapids**
Blodgett Regional Poison Center
(800) 632-2727 (in state)

### MINNESOTA
**Minneapolis**
Hennepin Regional Poison Center
(612) 347-3141

**St. Paul**
Minnesota Regional Poison Center
(800) 222-1222 (in state)
(612) 221-2113

### MISSOURI
**St. Louis**
Cardinal Glennon Children's Hospital
(800) 366-8888
(800) 392-9111
(314) 772-5200
(314) 577-5336 (TTY)

### MONTANA
**Denver** (Colorado)
Rocky Mountain Poison and Drug Center
(303) 629-1123

### NEBRASKA
**Omaha**
Omaha Poison Center
(402) 390-5555 (Omaha only)
(800) 955-9119 (NE & WY)

### NEW JERSEY
**Newark**
New Jersey Poison Information and Education System
(800) 962-1253
(201) 923-0764

### NEW MEXICO
**Albuquerque**
New Mexico Poison and Drug Information Center
(800) 432-6866 (NM only)
(505) 843-2551

### NEW YORK
**Mineola**
Long Island Regional Poison Control Center
(516) 542-2323, 2324, 2325, 3813

**New York**
New York City Poison Center
(212) 340-4494
(212) 764-7667
(212) 689-9014 (TDD)

**Nyack**
Hudson Valley Poison Center
(800) 336-6997
(914) 353-1000

### OHIO
**Cincinnati**
Regional Poison Control System and Cincinnati Drug and Poison Information Center
(513) 558-5111
(800) 872-5111 (in state)

**Columbus**
Central Ohio Poison Center
(800) 682-7625
(614) 228-1323
(614) 461-2012
(614) 228-2272 (TTY)

### OREGON
**Portland**
Oregon Poison Center
(503) 494-8968
(800) 452-7165 (in state)

### PENNSYLVANIA
**Hershey**
Central Pennsylvania Poison Center
(800) 521-6110

## Poison Control Centers (cont'd)

### PENNSYLVANIA (continued)

**Philadelphia**
The Poison Control Center serving the greater Philadelphia metropolitan area
(215) 386-2100

**Pittsburgh**
Pittburgh Poison Center
(412) 681-6669

### RHODE ISLAND

**Providence**
Rhode Island Poison Center
(401) 277-5727
(401) 277-8062 (TDD)

### TEXAS

**Dallas**
North Texas Poison Center
(800) 441-0040 (in state)
(214) 590-5000

**Galveston**
Texas State Poison Center
(800) 392-8548 (in state)
(409) 765-1420 (Galveston)
(713) 654-1701 (Houston)

### UTAH

**Salt Lake City**
Utah Poison Control Center
(801) 581-2151
(800) 456-7707 (in state)

### VIRGINIA

**Charlottesville**
Blue Ridge Poison Center
(804) 924-5543
(800) 451-1428

**Richmond**
Virginia Poison Center
(800) 552-6337 (in state)

### WEST VIRGINIA

**Charleston**
West Virginia Poison Center
(800) 642-3625 (in state)
(304) 348-4211

### WYOMING

**Omaha** (Nebraska)
The Poison Center
(402) 390-5555 (Omaha)
(800) 955-9119 (NE & WY)

# 5. Computerized Information Services*

The development of electronic databases has revolutionized the retrieval of up-to-date, accurate, and comprehensive information on hazardous exposures. Databases are commonly accessed through (1) on-line retrieval of information, (2) floppy disk, or (3) CD-ROM (Compact Disk—Read Only Memory). The advantage of on-line systems is that they provide the greatest versatility and are the most comprehensive in obtaining different kinds of information because several databases can be cross-searched. CD-ROMs may be easier to search and may be cost effective depending on use.

## Toxicology Data Network (TOXNET)

The Toxicology Data Network (TOXNET), developed by the National Library of Medicine (NLM), is a computerized system of files oriented to toxicology and related areas. Three options are available for searching NLM files. The user may purchase a software package, GRATEFUL MED, to formulate searches offline and then dial into the files. Users may also do direct or menu searching when connected directly to TOXNET files. The following files are currently included in TOXNET:

### Hazardous Substance Data Bank (HSDB)

This toxicology database was developed by NLM and ATSDR. It is a factual, peer-reviewed database of more than 4200 chemicals. Records are in 12 different information categories: substance identification, manufacturing/use, chemical/physical properties, safety and handling, toxicity, biomedical effects, pharmacology, environmental fate/exposure summary, exposure standards and regulations, monitoring and analysis methods, additional references, and express data. HSDB includes annotated medical treatment information derived from the Poisindex® database. This database is partially funded by ATSDR.

### Registry of Toxic Effects of Chemical Substances (RTECS)

This database provides information on more than 100,000 potentially toxic chemicals and includes toxicity data, chemical identifiers, NTP test status, and exposure standards. RTECS is built and maintained by NIOSH.

### Chemical Carcinogenesis Research Information System (CCRIS)

This resource provides scientifically evaluated data from carcinogenicity, mutagenicity, tumor-promotion, and tumor-inhibition tests on 2100 substances that have been evaluated according to criteria and protocols widely accepted by experts in carcinogenesis.

### Toxic Release Inventory (TRI)

The TRI was created by NLM and the Environmental Protection Agency (EPA). It is a record of estimated releases to the environment, reported by industries, of more than 300 toxic chemicals based on information collected by EPA.

### Toxic Chemical Release Inventory Facts (TRIFACTS)

TRIFACTS supplements the environmental release data on chemicals in the TRI with information related to the health and ecological effects and safety and handling of these chemicals. The data may be especially useful to workers, employers, community residents, and health professionals.

### The Integrated Risk Information System (IRIS)

IRIS is an EPA database that contains chemical-specific information on more than 370 chemicals. It contains information on reference doses, carcinogenicity, drinking water health advisories, risk management, and supplementary data.

* The use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

### Environmental Teratology Information Center Backfile (ETICBACK)

ETICBACK is a bibliographic database containing more than 49,000 citations to publications concerning teratology and developmental toxicology. It contains publications dating from pre-1950 through 1988. This database was produced by Oak Ridge National Laboratory in Oak Ridge, Tennessee. ETICBACK is continued in the Developmental and Reproductive Toxicology Database (DART) database.

### Developmental and Reproductive Toxicology Database (DART)

DART is a bibliographic database containing citations to literature published on birth defects and other aspects of reproductive and developmental toxicology since 1989. The file currently contains more than 1500 records. Plans call for the addition of approximately 3600 records each year. DART is a continuation of the ETICBACK file. DART is funded by National Institute of Environmental Health Sciences (NIEHS) and EPA.

### Environmental Mutagen Information Center (EMIC)

EMIC is a bibliographic database on chemical, biologic, and physical agents that have been tested for genotoxic activity. It contains citations from literature after 1988. The database is produced by the Oak Ridge National Laboratory in Oak Ridge, Tennessee, and is funded by the federal government.

### Environmental Mutagen Information Center Backfile (EMICBACK)

This is the backfile for the Environmental Mutagen Information Center (EMIC) database. EMICBACK is a bibliographic database on chemical, biologic, and physical agents that have been tested for genotoxic activity. It contains approximately 71,000 citations from literature published from 1950 through 1988. The database is produced by the Oak Ridge National Laboratory in Oak Ridge, Tennessee, and is funded by the federal government.

### Directory of Biotechnology Information Resources (DBIR)

DBIR is a multicomponent data bank containing information on a wide range of resources related to biotechnology. The resources include on-line databases and networks, bulletin boards, organizations, collections, and publications such as books and compendiums. The DBIR file currently contains 1400 records.

## Other Databases

NLM also offers the following databases:

**Toxicology Information On-Line (TOXLINE/TOXLIT)** is designed specifically to offer comprehensive bibliographic coverage of toxicology information. It includes the pharmacologic, biochemical, physiologic, environmental, and toxicologic effects of chemicals and drugs. Sixteen subfiles containing approximately 2.5 million references can be searched. Subfiles are from Chemical Abstracts, Biological Abstracts, International Pharmaceutical Abstracts, and others. TOXLINE is available through the NLM MEDLARS System.

**MEDLINE** is the database used by most health care practitioners. It is the on-line version of Index Medicus. It is a bibliographic database that indexes more than 3200 journals published in the United States and abroad. It can be accessed easily through the menu-driven Grateful Med software.

Other on-line systems include the following databases:

**Chemical Abstracts** database provides worldwide information about chemical sciences, patents, books, conference proceedings, government research reports, and literature from more than 12,000 journals.

**NIOSH Technical Information Center (NIOSHTIC)** is a compilation in abstract form of information about toxicology, epidemiology, industrial hygiene, and other areas of occupational safety and health. It is produced by the National Institute for Occupational Safety and Health.

**Hazardline** provides emergency response, safety, regulatory, and health information on more than 4000 chemicals. Produced by Occupational Health Services, Hazardline contains an extensive companion file on Material Safety Data Sheets.

**Online Library System (OLS)** is a free database from EPA and is available through Internet or a commercial phone number. OLS provides information on EPA publications and documents.

**Reproductive Toxicology (REPROTOX)** includes information on reproductive toxicology. It is an inexpensive database, easy to search, providing a beginning for more extensive evaluation of toxic exposures.

**National Pesticide Information Retrieval System (NPIRS)** contains registration information on 45,000 pesticides registered by EPA and the states. It includes specific information about the chemicals, studies, and related documents submitted to EPA by companies seeking registration.

## Compact Disk—Read Only Memory Systems

The Compact Disk—Read Only Memory (CD-ROM) systems use a compact disk reader and a computer software package to read the information on a compact disk. Because the CD-ROM databases are generally updated quarterly, the information is not as current as that obtained from on-line searches. Two of the better known CD-ROM producers are Micromedex and SilverPlatter. Micromedex products include Poisindex and TOMES. SilverPlatter products include CHEM-BANK, OSH-ROM, and PEST-BANK. (For a complete listing of environmental health databases and vendors see *Environment On-line...the Greening of Databases* published by On-Line, Inc.; Wilton, CT; ISBN 0-910965-05-6.)

**Micromedex** developed the **Poisindex® CD-ROM** System used in poison control centers. Poisindex contains toxicology information on drugs and consumer products.

The **TOMES-PLUS System (Toxicology, Occupational Medicine and Environmental Series Information System)** provides toxicology information about acute and chronic exposure to occupational and environmental chemicals. The **TOMES-Plus®** System includes the following databases: Meditext: detailed information on the evaluation and treatment of persons exposed to industrial chemicals. OSHA Permissible Exposure Limits (PEL) information is also supplied; Hazardtext: information on spills, leaks, and fires that may occur in hazardous materials incidents; protocols for first accident/injury/illness response; Department of Transportation Emergency Response Guides; the Hazardous Substances Data Bank (HSDB); the U.S. Coast Guard's Chemical Hazard Response Information System (CHRIS); the Oil and Hazardous Materials/Technical Assistance Data System (OHM/TADS); the Registry of Toxic Effects of Chemical Substances (RTECS); the New Jersey Department of Health's Fact Sheets; the EPA's Integrated Risk Information System (IRIS); and Reproductive Toxicology (REPROTOX).

**SilverPlatter** has various CD-ROM disks of toxicology information. Compact disks available include the following: **CHEM-BANK**, which includes the Registry of Toxic Effects of Chemical Substances (RTECS), the Oil and Hazardous Materials/Technical Assistance Data System (OHMTADS), the Chemical Hazard Response Information System (CHRIS), and the Hazardous Substance Data Bank (HSDB).

**OSH-ROM** includes the NIOSH Technical Information Center (NIOSHTIC), the HSALINE database of the Health and Safety Executive (U.K.), and CISDOC from the International Labor Organization. The Major Hazard Incident Data Service (MHIDS) provides information on more than 3000 major accidents involving chemicals.

**PEST-BANK** contains information on the U.S. Registered pesticides used in agriculture, industry, and general commerce. The information comes from the National Pesticide Information Retrieval System (NPIRS). It contains information on synonyms, registration dates and registering companies, composition and formulation, sites, and pests affected by the pesticide.

**TOXLINE** contains toxicologic information from NLM that includes references to published materials on topics such as drugs, food, chemicals, occupational hazards, pesticides, and toxicologic analysis.

**MEDLINE** contains bibliographic citations and abstracts of biomedical literature.

# 6. State/Federal/National Resources

**Chemical Emergencies**

Chemical Spills Emergency Hotline
(800) 535-0202

EPA Hazardous Waste Hotline
(800) 535-0202

**Hazardous Waste**

Emergency Planning and Community Right-To-Know Hotline (EPA)
Developing chemical contingency plans, gathering site-specific information, list of more than 400 acutely toxic chemicals
(800) 535-0202

Superfund Records of Decision
Hazardous waste, sites to be cleaned up, actions being taken
(703) 412-9810 or
(800) 535-0202

Integrated Risk Information System (IRIS)
Hazardous chemicals information, including health effects
(301) 496-6531

IRIS User Support
(513) 569-7254

**Lung Disease**

Lungline/National Jewish Hospital
Information on lung disease from chemical exposure
(800) 222-5864

**Lead**

National Center for Environmental Health (CDC)
Lead poisoning prevention
(404) 488-7330

National Maternal and Child Health Clearinghouse
Publications on lead poisoning
(703) 821-8955

National Lead Information Center
(800) LEAD-FYI

**Occupational Health**

NIOSH (CDC)
Information and publications on health effects of occupational exposures
(800) 356-4674

Medical Section
(513) 841-4386

**Occupational Health (continued)**

Industrial Hygiene
(513) 841-4374

OSHA (Occupational Safety and Health Administration)
Regulations for toxic and hazardous substances in the workplace
(202) 219-8036

**Pesticides**

Pesticide Docket
(703) 305-5805

National Pesticide Telecommunications Network
Pesticides
(800) 858-7378 or
(806) 743-3095

National Pesticides Information Retrieval System (NPIRS) (funded by EPA/USDA, managed by Purdue University) Help number for searching NPIRS database to get fact sheets on pesticides, insecticides, fungicides, state and federally registered chemicals
(317) 494-6614

**Radon**

Radon Hotline
(800) SOS-RADON

EPA Office of Radon Programs
(202) 233-9370

**Toxic Substances**

Toxicology Information Response Center (Oak Ridge)
General toxicology information, searches on chemicals
(615) 576-1746

Agency for Toxic Substances and Disease Registry (ATSDR)
Toxicological profiles in draft (Final profiles available from National Technical Information Service)
(404) 639-6000

Toxic Substances Control Act (TSCA)
Hotline/Public Information Office (EPA)
Answers questions and gives general technical assistance on TSCA. Guidance on TSCA regulations
(202) 554-1404

**Toxic Substances (continued)**

Toxic Chemical Release Inventory System (EPA)
Information about which chemicals are used, stored, released by companies
(800) 535-0202

Chemical Referral Center (American Chemical Society)
Nonemergency health and safety information on chemicals
Outside continental United States
(800) 262-8200

**Water**

Environmental Protection Agency Safe Drinking Water Hotline
(800) 426-4791

## State Health Departments

Alabama Department of Public Health
434 Monroe Street
Montgomery, AL 36130-3017
(205) 613-5200

Alaska Division of Public Health
PO Box 110610
Juneau, AK 99811-0610
(907) 465-3090

Arizona Department of Health Services
1740 W. Adams Street
Phoenix, AZ 85007
(602) 542-1024

Arkansas Department of Health
4815 W. Markham Street
Little Rock, AR 72205-3867
(501) 661-2111

California Department of Health Services
714 P Street
Sacramento, CA 95814
(916) 445-4171

Colorado Department of Public Health and Environment
4300 Cherry Creek Drive S.
Denver, CO 80222-1530
(303) 692-2100

Connecticut Department of Health Services
150 Washington Street
Hartford, CT 06106
(203) 566-2038

Delaware Division of Public Health
Department of Health and Social Services
PO Box 637
Dover, DE 19903
(302) 739-4701

District of Columbia Department of Human Services
Commission of Public Health
1660 L Street NW
Washington, DC 20036
(202) 673-7700

Florida Health Office
Department of Health and Rehabilitation Services
1323 Winewood Blvd, Bldg 1
Tallahassee, FL 32399-0700
(904) 487-2705

Georgia Department of Human Resources
Two Peachtree Street, NE
Atlanta, GA 30303
(404) 657-2700

Guam Public Health and Social Services
PO Box 2816
Agana, Guam 96910
(671) 734-2083

Hawaii Department of Health
1250 Punchbowl Street
PO Box 3378
Honolulu, HI 96801
(808) 586-4410

Idaho Division of Health
Department of Health and Welfare
450 W. State Street
Boise, ID 83720
(208) 334-5945

Illinois Department of Public Health
535 W. Jefferson Street
Springfield, IL 62761
(217) 782-4977

Indiana State Department of Health
PO Box 1964
1330 W. Michigan Street
Indianapolis, IN 46206-1964
(317) 633-8400

Iowa Department of Public Health
Robert Lucas State Office Building
312 E. 12th Street
Des Moines, IA 50319-0075
(515) 281-5605

Kansas Department of Health and Environment
900 SW Jackson
Topeka, KS 66612-1290
(913) 296-1343

Kentucky Department for Health Services
275 E. Main Street
Frankfort, KY 40621
(502) 564-3970

## State Health Departments (cont'd)

Louisiana Department of Health and Hospitals
1201 Capitol Access Road
East Entrance
PO Box 629
Baton Rouge, LA 70821
(504) 342-9500

Maine Bureau of Health
Department of Human Services
State House Station 11
Augusta, ME 04333
(207) 287-2736

Maryland Department of Health and Mental Hygiene
201 W. Preston Street
Baltimore, MD 21201
(410) 225-6860

Massachusetts Department of Public Health
150 Tremont Street
Boston, MA 02111
(617) 727-2700

Michigan Department of Public Health
3423 N. Logan Street
PO Box 30195
Lansing, MI 48909
(517) 335-8024

Minnesota Department of Health
717 Delaware Street SE
PO Box 9441
Minneapolis, MN 55440-9441
(612) 623-5000

Mississippi Department of Health
PO Box 1700
2423 N. State Street
Jackson, MS 39215-1700
(601) 960-7634

Missouri Department of Health
1730 E. Elm Street
PO Box 570
Jefferson City, MO 65102
(314) 751-6001

Montana Department of Health and Environmental Sciences
Cogswell Bldg
1400 Broadway
Helena, MT 59620
(406) 444-2544

Nebraska Department of Health
301 Centennial Mall S.
PO Box 95007
Lincoln, NE 68509-5007
(402) 471-4047

Nevada Health Division
505 E. King Street
Carson City, NV 89710
(702) 687-4740

New Hampshire Division of Public Health Services
Health and Welfare Building
6 Hazen Drive
Concord, NH 03301-6527
(603) 271-4501

New Jersey Department of Health
CN 360
Trenton, NJ 08625-0360
(609) 292-7837

New Mexico Health Department
1190 St. Francis Drive
Santa Fe, NM 87503
(505) 827-2850

New York Department of Health
Tower Building
Empire State Plaza
Albany, NY 12237
(518) 474-2011

North Carolina Department of Environment, Health and Natural Resources
Division of Health Services
512 N. Salisbury St.
PO Box 27687
Raleigh, NC 27611-7687
(919) 733-4984

North Dakota Department of Health and Consolidated Laboratories
State Capitol Judicial Wing
600 E. Boulevard Avenue
Bismark, ND 58505-0200
(701) 224-2372

Ohio Department of Health
246 N. High Street
Columbus, OH 43266-0588
(614) 466-2253

## State Health Departments (cont'd)

Oklahoma Department of Health
1000 NE 10th Street
Oklahoma City, OK 73117-1299
(405) 271-4200

Oregon State Health Division
800 NE Oregon Street, #21
Portland, OR 97232
(503) 731-4000

Pennsylvania Department of Health
802 Health and Welfare Bldg.
Harrisburg, PA 17120
(717) 787-6436

Puerto Rico Department of Health
Bldg. A, Call Box 70184
San Juan, PR 00936
(809) 766-1616

Rhode Island Department of Health
3 Capitol Hill
Providence, RI 02908-5097
(401) 277-2231

South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201
(803) 734-4880

South Dakota Department of Health
445 E. Capitol, Anderson Bldg.
Pierre, SD 57501
(605) 773-3361

Tennessee Department of Health and Environment
344 Cordell Hull Bldg.
Nashville, TN 37247-0101
(615) 741-3111

Texas Department of Health
1100 W. 49th Street
Austin, TX 78756
(512) 458-7375

Utah Department of Health
288 N. 1460 W.
PO Box 16700
Salt Lake City, UT 84116-0700
(801) 538-6111

Vermont Department of Health
PO Box 70, 60 Main Street
Burlington, VT 05402
(802) 863-7280

Virgin Islands Department of Social and Health Services
St. Thomas Hospital
St. Thomas, VI 00802
(809) 774-0117

Virginia Department of Health
1500 E. Main Street Station, PO Box 2448
Room 214
Richmond, VA 23219
(804) 786-3561

Washington Department of Health
1300 SE Quince
PO Box 47890
Olympia, WA 98504-7800
(206) 753-5871

West Virginia Department of Health and Human Resources
Bureau of Public Health
Bldg. 3, Room 518
State Capitol Complex
Charleston, WV 25305
(304) 558-2971

Wisconsin Division of Health
1 W. Wilson Street
PO Box 309
Madison, WI 53701-0309
(608) 266-1511

Wyoming Department of Health
Hathaway Bldg., 4th floor
Cheyenne, WY 82002
(307) 777-7656

## Sample: Environmental Health Questionnaire

(Source: Rocky Mountain Center for Occupational and Environmental Health)

**Rocky Mountain Center for Occupational & Environmental Health**
Department of Family and Preventive Medicine
University of Utah School of Medicine
50 South 2000 East
Salt Lake City, Utah 84112
(801) 581-5056 FAX 581-7224
Federal Tax ID No. 87-6000525

Occupational & Environmental Medicine Clinic

# ENVIRONMENTAL HEALTH PROBLEM QUESTIONNAIRE

IDENTIFICATION AND CONTACT INFORMATION:

NAME: DATE:

AGE: SEX: ☐ F ☐ M PHONE: (Home) (Work)

ADDRESS:

CITY: STATE: ZIP CODE:

Please send a copy of the final report to:

NAME:

ORGANIZATION:

ADDRESS:

CITY: STATE: ZIP CODE:

Is this your personal physician? ☐ Yes ☐ No

PART A: ENVIRONMENTAL HEALTH PROBLEM

1. Reason for evaluation:

2. How long has this problem existed?

3. What do you suspect to be the cause?

4. How many people live in your household?

5. What is the distance to your nearest neighbors?

6. Do others in your household or neighborhood have similar problems? ☐No ☐Yes ☐ Don't kno

7. If yes, how many others?

8. Describe their symptoms:

9. Do you own any pets or livestock? ☐ No ☐ Yes, describe:

10. If yes, have you noticed any problems? ☐ No ☐ Yes, describe:

11. Do you maintain crops, a garden, a yard, trees or shrubs? ☐ No ☐ Yes

12. If yes, have you noticed any problems? ☐ No ☐ Yes, describe:

13. Has a government agency, an industry or a business evaluated this problem? ☐ No ☐ Yes

14. If yes, which agency and what were their findings and recommendations?

PART B: OCCUPATIONAL AND EXPOSURE HISTORY

15. Please list all other jobs you have held since high school, including military service. List backward fro current or most recent job.

| Job Title/Occupation | Type of Industry | Year Began | Year End |
|---|---|---|---|
| Example: Spray painter | Auto Body Repair | 1985 | 1989 |

16. On your current or most recent job do you:

Use separate work clothes? ☐ No ☐ Yes

Take work clothes home? ☐ No ☐ Yes

Use separate work shoes? ☐ No ☐ Yes

Have a lunchroom away from work exposures? ☐ No ☐ Yes

If yes, do you use it? ☐ Never ☐ Sometimes ☐ Always

17. If you use tobacco, do you smoke or chew while working? ☐ No ☐ Yes ☐ N/A

18. Please check substances or processes to which you are or have been exposed at work, home or in l

CHEMICALS/SUBSTANCES/PROCESSES

| | | |
|---|---|---|
| ☐ carbon monoxide | ☐ welding | ☐ burning |
| ☐ gasoline/diesel fuel | ☐ engine exhaust | ☐ diesel exhaust |
| ☐ asphalt fumes | ☐ PAHs | ☐ petroleum products |
| ☐ strong acids | ☐ strong alkalis/caustics | ☐ ammonia |
| ☐ chlorine/hydrochloric acid | ☐ fluorine/hydrofluoric acid | ☐ phenol |
| ☐ carbon disulfide | ☐ vinyl chloride | ☐ plastic or resin fumes |
| ☐ heavy metals | ☐ arsenic | ☐ cadmium |
| ☐ chromium | ☐ mercury | ☐ nickel |
| ☐ lead | ☐ other metal | |
| ☐ metal grinding | ☐ cutting fluids | |
| ☐ asbestos | ☐ fiberglass | ☐ other fibers |
| ☐ silica or abrasives | ☐ cement dust | ☐ talc |
| ☐ glues/epoxies | ☐ paints/varnishes | ☐ isocyanates |
| ☐ finish removers/strippers | ☐ dyes/inks | ☐ volatile organics (VO |
| ☐ detergents/soaps | ☐ solvents/degreasers | ☐ alcohols |
| ☐ antibiotics | ☐ latex | ☐ formaldehyde |
| ☐ wood preservatives | ☐ pesticides | ☐ herbicides |
| ☐ fumigants | ☐ animal dander | ☐ grain dust |
| ☐ tobacco smoke | ☐ wood smoke | ☐ radon |
| ☐ incense | ☐ air fresheners | ☐ mold |
| ☐ mildew | ☐ other, specify | |

19. On the list above, please mark work related exposures with a W, home related exposures with an H, a hobby or recreational exposures with an R

Example: A person who works with ammonia, has a dog and refinishes furniture in his spare time would mark:

☐ ammonia - W ☐ animal dander- H ☐ paints/varnishes R

20. Please check the physical and biological influences which you are exposedat home, at work or in ho

| | | |
|---|---|---|
| ☐ excessive heat | ☐ low humidity | ☐ pests/rodents |
| ☐ excessive cold | ☐ high humidity | ☐ high noise levels |
| ☐ heights or altitude | ☐ prolonged exposure to sunlight | ☐ poor lighting |
| ☐ new carpets, curtains, etc | ☐ poor ventilation | ☐ strong odors/fumes |
| ☐ radiation | ☐ other, specify | |

21. On the list above, please mark work related exposures with a W, home related exposures with an H, a hobby or recreational exposures with an R.

22. Do you wear any of the following protective equipment in your current, most recent job or your hobb

| | Not needed | Use sometimes | Use almost always | Needed. not used |
|---|---|---|---|---|
| Mask respirator: | ☐ | ☐ | ☐ | ☐ |
| Air-supply respirator: | ☐ | ☐ | ☐ | ☐ |
| Gloves: | ☐ | ☐ | ☐ | ☐ |
| Coveralls or apron: | ☐ | ☐ | ☐ | ☐ |
| Safety glasses: | ☐ | ☐ | ☐ | ☐ |
| Hearing protection: | ☐ | ☐ | ☐ | ☐ |
| Other (specify): | ☐ | ☐ | ☐ | ☐ |

23. Were you ever diagnosed as having a work-related symptoms or disease from exposure to chemicals?

☐ No ☐ Yes, specify:

If yes, who diagnosed it?

PART C: RESIDENTIAL HISTORY

24. Length of time at present address/or at home where potential exposure occurred:

25. Type of residence (mobile home, apartment, single dwelling, duplex, etc.)

26. Site of residence (farm, trailer park, suburban, urban, etc.)

27 How old is your residence?

28. Have there been renovations done to your residence since you've lived there (insulation, paint application/removal, asbestos removal, etc.)? No☐ Yes, describe: ___

29. What is your source of household water? ☐town water ☐ private well ☐ other

30. Any recent water problems? ☐ No☐ Yes, describe:

31. What type of waste removal system is used? ☐town sewage ☐septic tank ☐other

32. Any recent waste removal problems? ☐No ☐Yes, describe:

33. Which of the following do you have in the home? (Check all that apply):

☐gas stove ☐ gas or oil furnace ☐wood stove ☐kerosene/gas space heaters ☐firepla

☐air purifier ☐ swamp cooler ☐air conditioner ☐ humidifier

☐smoke detectors ☐carbon monoxide detectors

34. Do you have lead pipes in the home? ☐ No ☐

35. Or use lead-glazed or imported pottery for cooking, eating or storing foods or beverages? ☐ No ☐

36. Do you use leaded crystal items for eating or storing foods or beverages? ☐ No ☐

37. Has your home or basement ever been flooded? ☐ No ☐

38. Do you have a basement? ☐ No ☐

39. If yes, is dampness a problem? ☐ No ☐

40. Do you live next door to or near an industrial plant? ☐ No ☐Yes, describe:

41. Do you live near a toxic waste or dump site? ☐ No ☐Yes, describe:

42. Do you or neighbors use pesticides or herbicides? ☐ No ☐Yes, describe:

43. Is there a stream, pond, wet-land or other natural water source on or near your homesite? ☐ No ☐Y describe:

44. Is your area prone to "temperature inversion" or air pollution? ☐ No ☐Yes, describe:

45. Has anyone in your household routinely or recently had a potential work exposure to toxic chemicals, heavy metals or industrial dust? ☐ No ☐Yes, describe:

46. If yes, has that person:

Used separate work clothes? ☐ No ☐ Yes

Taken work clothes home? ☐ No ☐ Yes

Used separate work shoes? ☐ No ☐ Yes

47. Do or did you rent or own? ☐ Rent ☐ Own

PART D: MEDICAL HISTORY

48. List prior or current illnesses, or conditions.

49. Check any of the following conditions you have had (past or present):

| | | |
|---|---|---|
| ☐ skin rash | ☐ high blood pressure | ☐ cancer |
| ☐ hay fever | ☐ heart attack | ☐ diabetes |
| ☐ chronic nasal congestion | ☐ coronary artery disease | ☐ thyroid disease |
| ☐ repeated episodes of sinusitis | ☐ anemia or blood | ☐ pancreatitis |
| ☐ chronic or recurrent hoarseness | ☐ other blood disease | ☐ tuberculosis |
| ☐ chronic cough | ☐ hearing loss | ☐ hepatitis |
| ☐ asthma | ☐ peripheral neuropathy | ☐ other liver disease |
| ☐ bronchitis | ☐ other nervous system disorder | ☐ kidney disease |
| ☐ emphysema | | |

50. List prior hospitalizations for illness

51. List prior surgeries:

52. Review of Systems: Check any symptoms you have had in the last 6 months.

General:

- ☐ weight gain
- ☐ weight loss
- ☐ fever
- ☐ chills
- ☐ night sweats
- ☐ weakness
- ☐ fatigue
- ☐ nervousness
- ☐ irritability
- ☐ personality change
- ☐ difficulty swallowing
- ☐ hoarseness
- ☐ excessive thirst
- ☐ sensitivity to cold or heat
- ☐ sleeping problems

Neurologic:

- ☐ depression
- ☐ loss of consciousness
- ☐ difficulty walking
- ☐ vision change
- ☐ change in hearing
- ☐ headache
- ☐ decrease in mental acuity
- ☐ seizures
- ☐ dizziness
- ☐ blurred vision
- ☐ ringing in ears
- ☐ weakness in arm/leg
- ☐ memory loss
- ☐ tremor
- ☐ loss of coordination
- ☐ double vision
- ☐ change in sense of taste or smell
- ☐ numbness or tingling in arm/leg

Respiratory or cardiac:

- ☐ cough
- ☐ spitting up blood
- ☐ swelling of hands or feet
- ☐ wheezing
- ☐ chest pain
- ☐ rapid heart rate
- ☐ shortness of breath
- ☐ difficulty breathing at night
- ☐ irregular heart rate
- ☐ need to sleep on more than one pillow

Gastrointestinal:

- ☐ loss of appetite
- ☐ heartburn
- ☐ blood in the stools
- ☐ nausea or vomiting
- ☐ jaundice (skin/eyes turn yellow)
- ☐ black stools
- ☐ abdominal pain
- ☐ diarrhea, constipation

Genitourinary:

- ☐ painful voiding
- ☐ blood in urine

Hematologic:

- ☐ anemia
- ☐ easy bruising

Musculoskeletal:

- ☐ joint pain
- ☐ neck pain
- ☐ joint swelling
- ☐ extremity pain
- ☐ back pain

Reproductive:

Females: ☐ Irregular /absent periods ☐ abnormal bleeding or spotting ☐ infertility

☐ miscarriages ☐ stillbirths ☐ children with birth defects

Males: ☐ Infertility ☐ children with birth defects

52. Are you ALLERGIC or unable to tolerate any medications? ☐ No ☐ Yes,
Specify:

53. Do you have allergies to substances other than drugs (animals, foods, plants, etc): ☐ No ☐ Yes,
Specify:

54. MEDICATIONS (include birth control pills, vitamins, other dietary supplements):
Name & Dose Name & Dose

55. Do you now or have you ever used tobacco?

☐ Never ☐ Used to smoke but quit in _____ (year) ☐ Currently smoke

Type: ☐ cigarettes: ____pack/day for ____years ☐ cigars ___ /day for ____years

☐ chewing tobacco ___ can/day for years ☐ pipe: ___ /day for ____years

56. Do you now or have you ever used alcohol?

☐ Never ☐ Used to drink but quit in (year) ☐ Use now

Type: ☐ beer ☐ wine ☐ hard liquor

How much:

How often:

PART E: SOCIAL HISTORY

57. Do you have a family physician? ☐ No ☐ Yes

58. Are you married? ☐ never ☐ currently ☐ separated ☐ divorced ☐ widowed

Spouse's occupation:

59. Education - Please circle highest grade you completed:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | More than 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade school | | | | | | | | High school | | | | College | | | | Postgraduate |

60. How many children live in your home? ___

PART F: FAMILY HISTORY

61. Check and list relationship if any member of your family has had one of the following conditions

| Condition | Family members | Condition | Family members |
|---|---|---|---|
| ☐ allergies | | ☐ high blood pressure | |
| ☐ hay fever | | ☐ heart attack | |
| ☐ chronic nasal congestion | | ☐ coronary artery disease | |
| ☐ frequent sinusitis | | ☐ stroke | |
| ☐ frequent hoarseness | | ☐ anemia or blood disease | |
| ☐ asthma | | ☐ hepatitis | |
| ☐ bronchitis | | ☐ other liver disease | |
| ☐ emphysema | | ☐ kidney disease | |
| ☐ tuberculosis | | ☐ thyroid disease | |
| ☐ ulcerative colitis | | ☐ nervous system disease | |
| ☐ cancer | | ☐ diabetes | |
| ☐ inherited disorder (specify) | | | |

PART G: ADDITIONAL INFORMATION

62. Is there anything else that you believe we should know?

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE.

## Appendix C: A Child with Lead Exposure

A nurses clinic in Tecumseh, Mississippi, routinely has open lead clinics for residents in the area due to the prevalence of lead exposure.

Five-year-old Jonathan was brought to the clinic by his mother who is concerned about the child's behavior at school. At a recent parent/teacher conference, the teacher reported the child was impulsive, disruptive, and hyperactive. In addition the mother reported the child frequently complains of stomach aches and often does not respond when called. However, she believes many of these problems are the child's response to her being pregnant.

Family history reveals the child lives with his mother, father and two sisters in a 76-year-old home in a small community. Both parents were born and raised in this town. The home they currently live in was the home of the mother's grandparents. One sister age 7 is also exhibiting difficulties academically and behaviorally in school. The other sister age 12 frequently complains of stomach aches and chronic fatigue but does well in school academically and behaviorally.

Jonathan and his family live 6 miles from a glass manufacturer. Both parents are employed outside the home. Jonathan's mother is an artist who makes pottery and his father operates a battery smelting plant. The family has resided in the same home for the past 12 years. No renovations have been done on the home except minor repairs to the window frames where the paint has recently peeled away.

The chart review reveals that the child has been at the 20$^{th}$ percentile for height and weight since age 3. You perform a developmental screen of Jonathon that shows his language and cognitive skills are low for his age group. A visual and auditory screen indicates a mild hearing loss. Lab work from a previous visit shows mild anemia. You discover several weeks after the visit that the Blood Lead Level (BLL) for Jonathan is 45 €g/dL.

During a routine planning meeting for your clinic you discover that many of the staff are concerned that there seems to be an increasing number of children that come in for screening services for "lead poisoning" from this same community. Many of the children have BLLs above 10 €g/dL.

1. Which members of the family are potentially exposed to the lead scenario above? Who in the family or the community may be at risk for experiencing lead poisoning? Discuss the growth and development factors for each individual or group at risk for exposure to lead.

2. What is the CDC guideline for BLLs that should trigger nurses to do more investigation and community interventions to prevent blood lead poisoning?

3. What are the symptoms from this case study that might indicate exposure to lead? What are the potential problems in waiting until a child presents with symptoms of lead poisoning before doing screening?

4. Describe primary, secondary, and tertiary intervention strategies for the family and community.

5. List two resources for referral and information that may assist the family in addressing this health issue. Discuss why you chose the resources and how you would use them in planning the intervention strategies for the family and the community.

## Appendix D: Community Environmental Health Assessment Tools

## Sample:  Environmental Health Survey

(Source: Mississippi Department of Health APEX-EH Pilot Project 1997)

# Environmental Health Survey

**Purpose of the Survey**:

The purpose of this interview/survey is to determine ENVIRONMENTAL HEALTH HAZARDS, ISSUES, or PROBLEMS as perceived by you.

**Directions**:

We do not need to know your name but need to know where you live.

(I) County of residence
(ii) Urban Specify
(iii) Rural
(iv) Number of years at current address
(v) Gender
(vi) Race

Please tell us if the environmental hazards, issues, or problems that I will name affect you as an individual or the public. The choices are : (a) YES, (b) NO, (c) DON'T KNOW

Please answer the question as best as you can. Thank you for your time and cooperation.

| Environmental Hazard, Issue, or Problem | A Yes | B No | C Don't Know |
|---|---|---|---|
| 1. Aerial Spraying | 1. | | |
| 2. AIDS? | 2. | | |
| 3. Air Pollution | 3. | | |
| 4. Chemical Run-off | 4. | | |
| 5. Contaminated Fish | 5. | | |
| 6. Drug Abuse? | 6. | | |
| 7. Foul Odors | 7. | | |
| 8. Hepatitis A | 8. | | |
| 9. Household Chemicals | 9. | | |
| 10. Household Garbage | 10. | | |
| 11. Improper Disposal of Pesticide Contianers | 11. | | |
| 12. Mosquitoes | 12. | | |
| 13. Noise | 13. | | |
| 14. Open Drains | 14. | | |
| 15. Pesticide Contamination | 15. | | |
| 16. Poor Housing | 16. | | |
| 17. Radon Exposure | 17. | | |
| 18. Sewage System | 18. | | |
| 19. Teenage Pregnancy? | 19. | | |
| 20. Water Pollution | 20. | | |

Do you think following Environmental Hazards, Issues, or Problems exist in your community?

| Environmental Hazard, Issue, or Problem | A Yes | B No | C Don't Know |
|---|---|---|---|
| | | | |
| 1. Air Pollution from Automobile Emissions | 1. | 1. | 1. |
| 2. Air Pollution from Cigarette Smoking in Homes, Worksites, etc. | 2. | 2. | 2. |
| 3. Air Pollution from Dry Cleaning Establishments | 3. | 3. | 3. |
| 4. Air Pollution from Industries | 4. | 4. | 4. |
| 5. Air Pollution from Pesticide Drift to Homes | 5. | 5. | 5. |
| 6. Air Pollution from Soil Radon in Homes | 6. | 6. | 6. |
| 7. Air Pollution from Woodstove Smoke in Homes | 7. | 7. | 7. |
| 8. Ammonia Poisonings from Workplace Exposures | 8. | 8. | 8. |
| 9. Carbon Monoxide Poisoning from Improper Ventilation of Indoor Burners | 9. | 9. | 9. |
| 10. Cockroach Infestation | 10. | 10. | 10. |
| 11. Farm Implement Injuries | 11. | 11. | 11. |
| 12. Fertilizers run-off in rivers, streams, and lakes | 12. | 12. | 12. |
| 13. Food Poisonings from Improper Handling or Storage | 13. | 13. | 13. |
| 14. Garbage Incineration | 14. | 14. | 14. |
| 15. Inadequately Maintained Septic Tanks | 15. | 15. | 15. |
| 16. Lead Poisonings from Paint and Plumbing of Old Homes | 16. | 16. | 16. |
| 17. Mosquitoes | 17. | 17. | 17. |
| 18. Off-road Vehicle Caused Injuries (Farm/Industrial) | 18. | 18. | 18. |
| 19. Pesticides in rivers, streams, and lakes | 19. | 19. | 19. |
| 20. Poisonings from household chemicals | 20. | 20. | 20. |
| 21. Radiation from Household Equipment (Microwave Ovens, T.V., Monitors?) | 21. | 21. | 21. |
| 22. Second-hand Pesticide Exposure of Family Members of the Workers | 22. | 22. | 22. |
| 23. Un-safe (Inadequately Maintained) Housing | 23. | 23. | 23. |
| 24. Unsanitary Workplace | 24. | 24. | 24. |
| 25. Water Pollution from Contamination of Wells by Leakage from Underground Storage Tanks | 25. | 25. | 25. |
| 26. Water Pollution from Contamination of Wells with Farm Animal Waste | 26. | 26. | 26. |
| 27. Water Pollution from Contamination of Wells with Fertilizer | 27. | 27. | 27. |
| 28. Water Pollution from Contamination of Wells with Pesticides | 28. | 28. | 28. |
| 29. Water Pollution from Contamination of Wells with Sewage | 29. | 29. | 29. |
| 30. Water Pollution from Contamination of Wells with Solid Waste Leachates (Fluid ruu-off from Landfill) | 30. | 30. | 30. |
| | | | |

APPENDIX I

# Environmental Health Survey

**Purpose of the Survey**:

The purpose of this interview/survey is to determine ENVIRONMENTAL HEALTH HAZARDS. ISSUES, or PROBLEMS as perceived by you.

**Directions**:

We do not need to know your name but need to know where you live.

(I) County of residence
(ii) Urban Specify
(iii) Rural
(iv) Number of years at current address
(v) Gender
(vi) Race

Please tell us if the environmental hazards, issues, or problems that I will name affect you as an individual or the public. The choices are : (a) YES, (b) NO, (c) DON'T KNOW

Please answer the question as best as you can. Thank you for your time and cooperation.

| | A | B | C |
|---|---|---|---|
| Environmental Hazard, Issue, or Problem | Yes | No | Don't Know |
| 1. Aerial Spraying | 1. | | |
| 2. AIDS? | 2. | | |
| 3. Air Pollution | 3. | | |
| 4. Chemical Run-off | 4. | | |
| 5. Contaminated Fish | 5. | | |
| 6. Drug Abuse? | 6. | | |
| 7. Foul Odors | 7. | | |
| 8. Hepatitis A | 8. | | |
| 9. Household Chemicals | 9. | | |
| 10. Household Garbage | 10. | | |
| 11. Improper Disposal of Pesticide Contianers | 11. | | |
| 12. Mosquitoes | 12. | | |
| 13. Noise | 13. | | |
| 14. Open Drains | 14. | | |
| 15. Pesticide Contamination | 15. | | |
| 16. Poor Housing | 16. | | |
| 17. Radon Exposure | 17. | | |
| 18. Sewage System | 18. | | |
| 19. Teenage Pregnancy? | 19. | | |
| 20. Water Pollution | 20. | | |

Do you think following Environmental Hazards, Issues, or Problems exist in your community?

| Environmental Hazard, Issue, or Problem | A Yes | B No | C Don't Know |
|---|---|---|---|
| | | | |
| 1. Air Pollution from Automobile Emissions | 1. | 1. | 1. |
| 2. Air Pollution from Cigarette Smoking in Homes, Worksites, etc. | 2. | 2. | 2. |
| 3. Air Pollution from Dry Cleaning Establishments | 3. | 3. | 3. |
| 4. Air Pollution from Industries | 4. | 4. | 4. |
| 5. Air Pollution from Pesticide Drift to Homes | 5. | 5. | 5. |
| 6. Air Pollution from Soil Radon in Homes | 6. | 6. | 6. |
| 7. Air Pollution from Woodstove Smoke in Homes | 7. | 7. | 7. |
| 8. Ammonia Poisonings from Workplace Exposures | 8. | 8. | 8. |
| 9. Carbon Monoxide Poisoning from Improper Ventilation of Indoor Burners | 9. | 9. | 9. |
| 10. Cockroach Infestation | 10. | 10. | 10. |
| 11. Farm Implement Injuries | 11. | 11. | 11. |
| 12. Fertilizers run-off in rivers, streams, and lakes | 12. | 12. | 12. |
| 13. Food Poisonings from Improper Handling or Storage | 13. | 13. | 13. |
| 14. Garbage Incineration | 14. | 14. | 14. |
| 15. Inadequately Maintained Septic Tanks | 15. | 15. | 15. |
| 16. Lead Poisonings from Paint and Plumbing of Old Homes | 16. | 16. | 16. |
| 17. Mosquitoes | 17. | 17. | 17. |
| 18. Off-road Vehicle Caused Injuries (Farm/Industrial) | 18. | 18. | 18. |
| 19. Pesticides in rivers, streams, and lakes | 19. | 19. | 19. |
| 20. Poisonings from household chemicals | 20. | 20. | 20. |
| 21. Radiation from Household Equipment (Microwave Ovens, T.V., Monitors?) | 21. | 21. | 21. |
| 22. Second-hand Pesticide Exposure of Family Members of the Workers | 22. | 22. | 22. |
| 23. Un-safe (Inadequately Maintained) Housing | 23. | 23. | 23. |
| 24. Unsanitary Workplace | 24. | 24. | 24. |
| 25. Water Pollution from Contamination of Wells by Leakage from Underground Storage Tanks | 25. | 25. | 25. |
| 26. Water Pollution from Contamination of Wells with Farm Animal Waste | 26. | 26. | 26. |
| 27. Water Pollution from Contamination of Wells with Fertilizer | 27. | 27. | 27. |
| 28. Water Pollution from Contamination of Wells with Pesticides | 28. | 28. | 28. |
| 29. Water Pollution from Contamination of Wells with Sewage | 29. | 29. | 29. |
| 30. Water Pollution from Contamination of Wells with Solid Waste Leachates (Fluid ruu-off from Landfill) | 30. | 30. | 30. |
| | | | |

51. What are your SOURCES of INFORMATION about the ENVIRNMENTAL HAZARDS, ISSUES, or PROBLEMS?

A) Coworkers
B) Friends
C) Medical Personnel
D) Newspapers
E) Radio
F) Relatives
G) Television

52. How do you dispose off your household garbage?

A) We burn it.
B) We dump it on our property
C) A waste Management Company Hauls it to a Landfill
D) City/County Pick-Up
E) Other

53. How is your household sewage disposed?

A) Into a City Sewerage System
B) Into a Private Septic Tank and Seepage Field
C) Into a Private Waste Stabilization Pond
D) Other (name or describe)_____

54. What is the SOURCE of your HOUSEHOLD DRINKING WATER?

A) Community Well/Tank
B) Hauled from a Distant Well or Supply
C) Private Drilled Well
D) Private Dug Well
E) Other (name and describe)
F)
G)
H)

55. What level of impact does the Environment have on PUBLIC HEALTH in your community?

A) Major
B) Minor
C) None
D) Don't Know

56. What agency or agencies is/are in-charge or looks after environmental health in your county?

A) Local Doctor
B) Local Fire Department
C) Local Hospital
D) Local Police Department/County Sheriff
E) Mississippi Cooperative Extension Office (County Agent)
F) Mississippi Department of Environmental Quality (Formerly the Air & Water Pollution Commision)
G) Mississippi State Department of Health/Local Health Department
H) Other (name and describe)

57. Name one major environmental hazard, issue, or problem in *your* community:

58. Do you have any suggestion to solve the problem?

RECORDING: Record each item on the chalkboard or flip chart.

COLLATING: Organize, clarify, and simplify the information on the flip chart.

PRIORITIZING: Please choose five items listed as the most important. Write them down and rank them on the chart below.

| Rank | Env. Hazard or Issue or Problem: WORKPLACE |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

| Rank | Env. Hazard or Issue or Problem: AGRICULTURAL ACTIVITIES |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

| Rank | Env. Hazard or Issue or Problem: IN HOME |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

| Rank | Env. Hazard or Issue or Problem: DRINKING WATER |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

| Rank | Env. Hazard or Issue: WASTE WATER |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

| Rank | Env. Hazard or Issue or Problem: AIR POLLUTION |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

| Rank | Env. Hazard or Issue or Problem: SOLID WASTE DISPOSAL |
|---|---|
| Highest 5 | |
| 4 | |
| 3 | |
| 2 | |
| Lowest 1 | |

Note:

Ask the participants in the nominal group process to prioritize different categories of ENVIRONMENTAL HAZARDS, ISSUES, or PROBLEMS in the order of descending levels of concern:

AGRICULTURAL ACTIVITIES
AIR POLLUTION
DRINKING WATER
IN HOME
SOLID WASTE DISPOSAL
WASTE WATER
WORKPLACE

## Sample:  Environmental Health Survey

(Source: Illinois Delta Health Project 1996)

# SURVEY FOR ENVIRONMENTAL HEALTH NEEDS ASSESSMENT
## CONDUCTED BY:
## THE SOUTHERN SEVEN HEALTH DEPARTMENT, THE EGYPTIAN PUBLIC AND MENTAL HEALTH DEPARTMENT, AND THE CENTER FOR RURAL HEALTH AND SOCIAL SERVICE DEVELOPMENT AT SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE

Thank you for helping us out! The purpose of this survey is to find out what community members know abo **Environmental Health**. You *may or may not* know the answer to all of the questions. Fill this out as best you can. **DO NOT** write your name on the survey.

1) Check off those issues that you think of as **Environmental Health** issues (leave others blank).

A. Logging in the Shawnee Forest ___
B. Damming a stream or river to build a reservoir ___
C. Mining on Federal forest land ___
D. Contaminated well water ___
E. Eating contaminated fish ___
F. Air Pollution ___
G. Household garbage ___
H. Abandoned coal strip pits ___
I. Open mine shafts ___
J. Open abandoned wells and cisterns ___
K. Improperly constructed wells (wells in use) ___
L. Public bathrooms ___
M. Sewage systems ___
N. Inadequate and run-down housing ___
O. Exposure to lead paint ___
P. Gas furnace venting problems ___
Q. Mosquitoes ___
R. Rabid bats, dogs, and other animals ___
S. Deer ticks and lyme disease ___
T. AIDS and other sexually transmitted diseases ___
U. Tuberculosis and other infectious diseases ___
V. Drug abuse ___
W. Noise in the workplace, near truck routes, along highways ___

2) Do you think the following issues are problems in southern Illinois:

| | |
|---|---|
| Yes | Yes I think this is a problem |
| No | No I do not think this is a problem |
| DK | I do not know if this is a problem |

A. Contaminated well water due to pesticides ___
B. Contaminated well water due to sewage, animals, etc. around well ___
C. Contaminated well water from toxic or hazardous waste dumps (roadside dumps and/or landfills) ___
D. Contaminated well water from regular solid waste (household) in roadside dumps and/or landfills ___
E. Contaminated well water due to salt brine near oil tanks ___
F. Contaminated well water due to coal mining ___
G. Contaminated well water due to dumping liquid and solid waste into mine shafts ___
H. Poor well water due to naturally occurring minerals (iron, hardness, etc.) ___
I. Contaminated streams and rivers ___
J. Contaminated fish and wildlife ___
K. Contaminated air from coal mining processing plants ___
L. Contaminated air in underground coal mines - exposure to miners ___
M. Contaminated air from farming such as pesticide drift, harvest dust, etc. ___
N. Contaminated air from power plants, paper processors, other industries ___
O. Contaminated air indoors from radon ___
P. Contaminated air indoors from wood stove smoke ___
Q. Contaminated air indoors from cigarette and cigar smoke ___
R. Carbon monoxide poisoning from improper venting of gas furnaces, wood stoves, kerosene heaters ___
S. Food poisoning at home, restaurants, fairs, etc. ___
T. Poisonings from household chemicals ___
U. Exposure to electromagnetic fields due to power lines ___
V. Exposure to lead in old paint and leaded gasoline used on farms ___
W. Inadequate or run-down housing ___
X. Unsanitary conditions in the workplace ___

| | |
|---|---|
| Yes | Yes I think this is a problem |
| No | No I do not think this is a problem |
| DK | I do not know if this is a problem |

Y. Burning garbage and trash

Z. Roach infestation

AA. Mosquito infestation

BB. Radiation from salt brine around oil tanks

CC. Contamination from toxic or hazardous waste dumps (roadside dumps and/or landfills)

DD. Contamination from regular solid waste in roadside dumps and/or landfills

EE. Injuries from open coal strip pits and quarries

FF. Injuries from off road vehicles

GG. Injuries from motor vehicles

HH. Inadequate private sewage systems

II. Inadequate public sewage systems

3) Regarding the issues you just reviewed, are other people in your area concerned about them? Circle one

A. Many of the issues are of concern

B. A few of the issues are of concern

C. Rarely are any issues of concern

D. I have never heard any discussion about these issues

4) Regarding the issues you just reviewed, how often do you hear about them from TV, radio, or newspape
Circle the most appropriate one.

A. Daily

B. Weekly

C. Monthly

D. Six times per year

E. Once every year

F. Once every 2 years

5) What county do you live in now? _____ 6) How many years?_____

7) What other southern Illinois counties have you lived in? _____

8) Did you grow up in southern Illinois? Circle one.

A. All of my youth (0 to 18 years old)

B. Most of my youth (0 to 18 years old)

C. None of my youth (0 to 18 years old)

9) What environmental situations, such as those listed on page 2, effect you daily? (indicate letter: A, B, etc.)

_____

_____

10) Where does your household garbage go? Circle one

A. A garbage hauler takes it to a landfill in southern Illinois

B. A garbage hauler takes it to a landfill out of state

C. A garbage hauler takes it to an incinerator

D. We burn it

E. I do not know

F. Other _____

11) Where does your household sewage go? Circle one

A. Into a private septic tank and seepage field

B. Into a private aeration system

C. Into a private lagoon or waste stabilization pond

D. Into a private septic tank and buried sand filter

E. Into a public sewage treatment system

F. I do not know

G. Other _____

12) Where does your household drinking water come from? Circle one

A. A drilled well
B. A dug well
C. We haul water to our cistern
D. A private pond
E. A municipal well
F. A municipal lake or reservoir
G. I do not know
H. Other _____

14) How do you feel the environment in your area effects people's health? Circle one.

A. It has a major impact
B. It has a minor impact
C. It has no impact
D. I do not know

15) Who do you think oversees environmental health in your county? Circle as many as appropriate.

| | | | |
|---|---|---|---|
| A. | Southern Seven Health Department | F. | Illinois Public Health Department |
| B. | Illinois Environmental Protection Agency | G. | Police Department |
| C. | County Extension Office | H. | Your Hospital |
| D. | Your Doctor | I. | Soil Conservation Service |
| E. | Egyptian Health Department | J. | I do not know |

K. Other (s)_____

16) Do you think your doctor is aware of the possible environmental issues listed on page 2?

A. Yes B. No C. I don't know

16) What do you like about your environment ?

_____

_____

17) What do you dislike about your environment ?

_____

_____

18) What environmental problem (s) would you like to see improved immediately?

_____

_____

19) How old are you? _____ years

20) Are you male or female? A. Male B. Female

21) What is the level of schooling you have?

A. Grade school
B. Some high school
C. Completed high school
D. Some college
E. Completed college
F. Graduate school or more

22) Do you have children under the age of 18 who live in southern Illinois?

A. Yes B. No

23) Comments?

_____

_____

_____

## KEY CONTACTS

Pa

| Date: | Completed By: | Site Name: |
|---|---|---|

AGENCY: (Include name, title, organization, address, and telephone number for the contact persons for each categ

Local Health Department Lead Staff and Public Contacts:

State Health Department Contacts:

State Environmental Contacts:

ATSDR Contacts:

Regional Representative:

Health Assessor:

Community Involvement Liaison:

Other:

EPA Contacts:

Regional:

Community Involvement Coordinator:

Remediation Project Manager:

Other:

OTHER CONTACTS: (Include name, title, organization, address, and telephone number for the contact persons for category.)

Media contacts:

Local Elected Officials:

State Elected Officials:

Federal Elected Officials:

Appointed Officials (City/County Managers, etc.):

OTHER CONTACTS: (Include name, title, organization, address, and telephone number for the contact persons f
category.)

Current Site Owner:

Potentially Responsible Parties:

LOCAL AGENCY CONTACTS: (Include name, title, organization, address, and telephone number for the contact p
for each category.)

Local Information Officer:

Local Emergency Planning Committee:

Fire Department:

Office of Emergency Management:

Transportation Department:

Public Works:

Assessor's Office:

School Board:

Planning and Zoning (Land Use):

Utilities:

Conservation Department:

Police Department:

Building Department:

Local Health Care Providers:

## NACCHO Needs Assessment Tool

(from Partnerships for Environmental Health Education: Performing a Community Needs Assessment at Hazardous Waste Sites [1997].)

| COMMUNITY GROUPS: (Include name, title, organization, address, and telephone number for the contact persons fo category.) | |
|---|---|
| Key Community Leaders: | Cultural/Political Organizations: |
| Civic/Religious Groups: | Technical Assistance Grant (TAG) Recipients: |
| Community Groups Organized Around Site: | Technical Advisors to TAG Recipients: |

| LEGAL CONTACTS: (Include name, title, organization, address, and telephone number for the contact persons for category.) |
|---|
| State Attorney's Office: |
| Judges: |
| Attorneys (include any attorneys representing any party in issues regarding the site): |

# COMMUNITY RESOURCES

| Date: | Completed By: | Site Name: |
|---|---|---|

Media That Serve the Community:

Organized Community Groups:

Professional Resources:

| Medical Community: | Academia: |
|---|---|
| Local Experts: | Outside Technical Experts/Consultants: |

Libraries and Other Information Services:

Potential Community Liaisons (indicate specialized knowledge which would make these persons effective liaisons v
affected populations):

## SITE HISTORY AND DESCRIPTION

Pa

| Date: | Completed By: | Site Name: |
|---|---|---|
| EPA I.D. #: | Site Address/Location: | EPA/ATSDR Region: |

If possible, locate a map showing the area, mark off the site location, and attach to the worksheet.

Type of Site: ☐ NPL (National Priorities List) ☐ RCRA (Resource Conservation & Recovery Act)

☐ Other_____

Contaminants of Concern Detected:

Media at Risk (record potential and known risks to the following media):

Air

Soil

Water

Residents on groundwater wells? Yes ☐ No ☐

| Site Boundaries: | Geographical/GeologicalDescription of Site: |
|---|---|

| | |
|---|---|
| Past Land Use: | Current Land Use: |
| Future Land Use: | Current Site Owners: |
| Previous Site Owners (if the information is available and applicable): | Potentially Responsible Parties (PRPs): |
| Other Relevant Information: | |

## KEY CHARACTERISTICS OF AREA SURROUNDING OR ADJACENT TO SITE

Pa

| Date: | Completed By: | Site Name: |
|---|---|---|

| Characteristics of Immediate Neighborhood: | Area Schools/Child Care Facilities: |
|---|---|
| Community Buildings in Area (churches, libraries, YMCA, etc.): | Office Buildings/Work Facilities: |
| Parks and Recreational Areas: | Wilderness/Wildlife Areas: |
| Community Medical Facilities: | |
| Additional Industries in Area: | Other Potential Sources of Pollution in Area: |
| Other Relevant Information: | |

## SIGNIFICANT EVENTS RELATED TO SITE



| Date: | Completed By: | Site Name: |
|---|---|---|

Public Hearings/SignificantMeetings

| Dates: | Sponsored by: | Outcome/Summaries of Proceedings: |
|---|---|---|
| | | |

Key Dates In the Future:

Health education activities taking place in community (indicate sponsoring organization or agency):

Has a Technical Assistance Grant (TAG) been received by residents? ☐ Yes ☐ No

Local Contact:

Technical Advisors:

| List all critical decisions/significantactions at the site (including dates). Include activities by agencies listed below. | |
|---|---|
| EPA: | State Environmental Agencies: |
| ATSDR: | State Health Agencies: |
| Local Agencies: | Potentially Responsible Parties (PRPs): |
| Community Groups: | Others: |
| Other Relevant Information: | |

## HEALTH ISSUES



| Date: | Completed By: | Site Name: |
|---|---|---|

Contaminants of Concern Detected:

Potential Health Effects:

Suspected and/or Documented Associated Health Effects in the Community:

Completed Exposure Pathways:

Potential Exposure Pathways:

Known Exposures:

| Human Health Concerns of: | |
|---|---|
| Affected Populations: | Broader Community: |
| Outside Groups: | Medical Community: |
| Local Elected Officials: | Local Health Department: |
| State Health Department: | State and Local Environmental Agencies: |
| ATSDR: | EPA: |

| Actions Taken by the Following to Address Health Issues: | |
|---|---|
| Local Elected Officials: | Local Health Department: |
| State Health Department: | State and Local Environmental Agencies: |
| ATSDR: | EPA: |
| Medical Community: | Outside Groups: |
| Other Relevant Information: | |

## OTHER CONCERNS



| Date: | Completed By: | Site Name: |
|---|---|---|

Describe any potential non-health concerns. Designate the groups which have the concern, including the following affected populations, the broader community, outside groups, local elected officials, state or local health departr environmental agencies, ATSDR, EPA, business community, others.

| | |
|---|---|
| Quality of Life Concerns (inconvenience factor, invasiveness, etc.): | Psychological/StressConcerns: |
| Employment Concerns: | Environmental Concerns: |
| Land Use Concerns: | Real Estate Concerns (including Property Values): |
| Political Concerns: | Liability: |
| Tourism: | Other: |

Other Relevant Information:

## COMMUNITY PROFILE



| Date: | Completed By: | Site Name: |
|---|---|---|

Overall Community Profile:

Racial Mix (% of population):

White, not of Hispanic Origin _____ Black, not of Hispanic Origin _____ Hispanic _____

Native American/Alaskan Native _____ Pacific Islander _____ Asian _____

Native Hawaiian _____

Age Distribution (% of population):

0-5 years _____ 6-12 years _____ 13-18 years _____

19-25 years _____ 26-40 years _____ 41-65 years _____

Over 65 _____

Gender Distribution (% of population):

Female _____ Male _____

Educational Background:

Socioeconomic Status:

Ethnic Mix: (List significant ethnic subpopulations which live or work in the community.)

Religious Groups:

| |
|---|
| Languages spoken in area: |
| Total Population Density: |
| Commuting Populations: (List significant populations who commute into, but do not reside within, the affected area. I percentage of total population.) |
| Designation of Target Populations: |

## TARGET POPULATION PROFILE



*(Complete one form for each target population identified in the Community Profile.)*

| Date: | Completed By: | Site Name: |
|---|---|---|
| | | |

Target Population Designation:

| Proximity of residences or workplaces to site location: | Is residence or workplace part of a known expos pathway?<br><br>☐ Yes ☐ No<br><br>If yes, designate pathway. |
|---|---|

Characteristics of Target Population:

| Socioeconomic status: | Access to medical care: |
|---|---|
| Education levels and literacy rates: | Languages spoken (indicate dominant languages): |
| Target population density: | Community groups and leaders: |

| Characteristics of Target Population: | |
|---|---|
| Elected officials: | Methods by which community members receive info (radio, t.v., newspapers, etc.): |
| Community and family structure: | Religious affiliations of Target Population (indicate d religions, if applicable): |
| Practices or behaviors that may place individuals or populations at risk: | |
| Areas of commonality with other target populations: | |
| Other: | |